MIDWEST DEALER ISSUE
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VA Producing iquid Fertilizer on ilot-Plant Scale

Output Being Used For Experiments, Tests, Agency Says

KNOXVILLE, TENN. — TVA now producing liquid fertilizers on an perimental basis and on a pilot- nt scale, it was announced Sept. Productive capacity is about 10 llons an hour, and TVA said that e entire output is being used in sts and experiments.

TVA said that of the liquids undergoing tests, "superphosphoric cid," appears to have unusual possibilities.

It is between 40 and 50% more ncentrated than the phosphoric id commonly being produced for rtilizer or chemical use, and a li- id fertilizer containing 12% nitro- n and 36% phosphate — a total nt food content of 48%—can be ade with it, TVA said.

Another liquid concentrate of interest to TVA is made with ammoni- n metaphosphate, a new TVA fer- lizer. The solid ammonium meta- osphate is 90% plant food, but it difficult to produce in solid form. VA said that experiments show it n be made in solution form more sily and that the resulting liquid not only concentrated but also sta- e at low temperatures. Solutions ammonium metaphosphate contain much as 52% of combined nitro- n and phosphate plant food, TVA ported.

hift from Cropland

WASHINGTON — Farmers in soil nservation districts last year con- rted more than 1,300,000 acres of op'and to grass and trees, accord- g to a summary of conservation ccomplishments released by Ezra aft Benson, secretary of agricul- re.

Spruce Budworm Spray Campaign Finished for 1956

WASHINGTON — Another campaign against forest insects has been successfully comp'eted with the spraying of 1,370,000 acres of spruce budworm infested lands in the West the U.S. Department of Agriculture reported Sept. 12.

The Forest Service state agencies and private landowners cooperated in carrying out this campaign to reduce and prevent damage to valuable forests. Costs were slightly less than $1 per acre. Work was done by private contractors without a single serious accident.

The spruce budworm spraying which is done by airplane included some 885,000 acres in Montana and northern Idaho, 500,000 in southern Idaho and 6,000 in New Mexico. While this year's campaign was directed to areas most seriously infested with budworm, it did not cover all infested forests.

While this year's control accomplishments are substantial, Forest Service experts point out that insects kill more timber than forest fires. Insects like the spruce budworm feed on the tree needles (leaves) which the tree needs to make food. By destroying the needles the insects retard the growth of trees. Some trees are killed by repeated needle damage. Thus they cut down timber production needed for homes and industries in the future.

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Near 100% Contribution to Soil Bank n Irrigated Cotton Belt Area Seen

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON — Top officials of e U.S Department of Agriculture ld Croplife last week that impor- nt cotton interests in the South ve surveyed the soil bank outlook r next year and forecast that in e irrigated Cotton Belt area there ill be a'most 100% contribution to e soil bank.

This would mean that 15% of he cotton acreage of the long sta- le cotton states of California, Ari- ona and New Mexico would be ut into the bank.

The same sources say that of the small, one-bale cotton farmers, few, if any, will go into the soil bank.

Of the small, so-called "family farms," where the farmer produces two to ten bales of cotton through his family labor, there will be little cooperation. Of the other so-called "family farmers," where there is a large accumulation of acreage, there will be a reasonably good compliance, but nothing like the top cooperation in the irrigated farm land.

The reason is that on irrigated farms the cost of bringing water up from wells and distributing it over cotton land is so great that the prospective 14¢ lb. for cotton multiplied by the average yield per acre looks more attractive.

NAC Meeting Panel Reviews Problems of Miller Amendment

By LAWRENCE A LONG
Editor of Croplife

SPRING LAKE, N.J.—That there are still unsolved problems in connection with the matter of pesticide residues on foods, was reiterated by a panel of experts at the final day's session of the National Agricultural Chemicals Assn. convention held here Sept. 5-7. Although tolerances have been set on some 1,200 combinations of crops and pesticidal materials, there are still areas where knowledge is incomplete and more data is needed, it was pointed out.

(For other convention coverage see page 1 of the Sept. 10 issue of Croplife.)

The panel, moderated by Lea S. Hitchner, executive secretary of the NAC, Washington, D.C., comprised representatives of the Food and Drug Administration, the U.S. Department of Agriculture, the land grant colleges and the association. These were Dr. George C. Decker, entomologist of the Illinois Natural History Survey, University of Illinois, Urbana, Ill.; J. T. Coyne, assistant head, pesticide regulation section, plant pest control branch, agricultural research service, USDA; W. B. Rankin, assistant to the director, bureau of biological and physical sciences, Food and Drug Administration, Washington, D.C.; and Joseph A. Noone, technical adviser of NAC.

An outline of things that should be included when a tolerance is established for residues of a pesticidal chemical was presented by Mr. Rankin. He said that when a tolerance is established, there should be an analytical method which permits the determination of the residue. It should be a method that can be employed by regulatory officials to test food crops.

In addition, he listed seven more factors which should be included in the establishment of residue tolerances. These included:

"There should be evidence to show the amount of residue that remains when the pesticide is used according to proposed directions. This evidence should establish the residue that may

(Continued on page 20)

Work Starts on Best Plant Annex

OAKLAND, CAL. — Construction has begun on the new million dollar annex to the main factory of the Best Fertilizer Co. at Lathrop near Stockton, Cal., with a mid-March date for completion.

The new p'ant will have an expected capacity of 200 tons a day of sulphuric acid to be used principally in the manufacture of fertilizer in Best's other plants. The Lathrop plant produces pelleted fertilizers using sulphuric acid purchased from other companies, but when the annex is completed Best will draw from its own manufacture. Al Roecks will continue as plant manager in Lathrop.

Headquarters of the Best company are at 1459 3rd St., Oakland, where a second plant mixes and packages fertilizer for gardens and lawns. A third factory at Houston, Texas, manufactures ammonium sulphate fertilizer.

India Gets $8,000 Pesticide Authorization

WASHINGTON—An $8,000 authorization to India for purchase of agricultural pesticides has been announced by International Cooperation Administration.

Terminal delivery date is Dec. 31, and source is the U.S. and possessions. Procurement will be carried out through the Emergency Procurement Service, General Services Administration.

402 Lb. Per Acre Cotton Yield Forecast

WASHINGTON—A cotton crop of 13,115,000 bales, with an indicated yield per acre of 402 lb., is forecast by the federal Crop Reporting Board as of Sept. 1. The estimated yield is 15 lb. an acre below last year's record high, but it is 119 lb. above the 10-year average.

The indicated corn yield on Sept. 1 was 43 bu. an acre, compared with 40.6 bu. in 1955 and the 10-year average of 37.1 bu.

Greece Asks Bids For $30 Million Fertilizer Plant

WASHINGTON — Bids for construction of a nitrate fertilizer plant at Ptolemais, Greece, to cost an estimated $30 million have been invited by the Ministry of Coordination of the Greek government in Athens. The closing date for submission of bids will be next Jan. 14.

A copy of the bid announcement in Greek with pertinent data and drawings is available for review on loan from the Trade Development Division, Bureau of Foreign Commerce, U.S. Department of Commerce in Washington. An English text will be available for review later.

Big Insect Year Hits New England

BOSTON — New Englanders have come face to face with the worst insect invasion of the past 15 years. More DDT has been sprayed in the six-state region, culminating with the all out spraying war on mosquitoes to prevent spread of encephalitis, sleeping sickness, than at any time in history.

New England had the worst invasion of mosquitoes in 15 years last fall. The Japanese beetle made early inroads, but fell victim to DDT sprayings and entomologists reported fewer of them in a recent check. However, the European earwig, a newcomer, infested corn and joined with ants in seeking damp and shade indoors.

Predatory praying mantes were found in Massachusetts and other parts of New England for the first time last summer and appeared again this summer. Along with these, the entomologists reported a profusion of rose chafers, Mexican bean beetles and various types of aphids.

The annual gypsy moth fight and mosquito control projects kept the six states busy with airplane spraying. Milky disease spore dust was used on Japanese beetles this year and is believed to have made important inroads in their extermination. Some entomologists say the beetle may be killed off entirely in five to 10 years.

Olin Mathieson Has New Houston Offices

NEW YORK—New offices for the southwestern district of the plant food division, Olin Mathieson Chemical Corp., have been established at 4520 Clinton Drive, Houston 20, Texas.

George A. Kelt, district manager, said additional space and the new office layout at the new location make possible more efficient handling of orders. The new offices connect with the southern warehouse, a shipping facility for Ammo-Phos fertilizers. The district offices formerly were in the Gulf Bldg. in downtown Houston.

Elwyn C. Weiss Named Sinclair Sales Representative

NEW YORK—Sinclair Chemicals, Inc. has announced the appointment of Elwyn C. Weiss as sales representative, Nitrogen Products Division for the territory of Indiana, Michigan and Ohio, with headquarters at Winona Lake, Ind.

A native of Howe, Ind., Mr. Weiss graduated in 1953 from Purdue University with a bachelor's degree in agriculture and agricultural education. In 1951, while attending Purdue, he was awarded an International Farm Youth Exchange scholarship to Finland. In 1952 he served as assistant county agricultural agent in LaGrange, Ind.

He resigned the position of vocational agriculture teacher for the Kosciusko County school system at Mentone, Ind., to join Sinclair Chemicals, Inc. He served as a light machine gun squad leader with the 1st cavalry division in the Japanese occupation and was discharged in 1948 as sergeant.

Program Set for Meeting of Official Agricultural Chemists

WASHINGTON — The seven annual meeting of the Associati Official Agricultural Chemists wi held Oct. 15-17 at the Shore Hotel, Washington, D.C. This m ing will emphasize the applicati modern methods of analysis to enforcement of the nation's laws ulating the composition and lab of foods, drugs, cosmetics, an feeds, fertilizers and pesticides.

This meeting, which will be he cooperation with the Food and Administration, Departmen Health, Education and Welfare the meat inspection branch, De ment of Agriculture, will comm rate the fiftieth anniversary of passage of the Pure Food and Act and the Meat Inspection A will also honor Dr. Harvey W. W —"the father of the pure food drug act."

The AOAC was founded in 188 the purpose of providing stan methods of analysis required for enforcement of pure food laws laws regulating the sale of agricultural commodities. Dr. W was one of the founders of the A and its secretary for many years.

An entire day's session will be voted to a symposium on method analysis for detecting pesticide dues in foods. Papers will be pres ed by S. A. Shrader and D. A. Ma Dow Chemical Co., C. L. Dunn Diamond Alkali Co., H. L. Will and J. P. Sweeney, U.S. Departm of Agriculture, Constance Anglin J. P. Mahon, Canadian Food Drug Division, and L. L. Ram H. W. Conroy, V. E. Munsey and E. Keppel and others from the F and Drug Administration.

One of the original interests of AOAC was in methods for the de mination of the important fertil components, nitrogen, phosphorus potassium. J. A. Brabson and W Wilhide, Tennessee Valley Autho will present an automatic titra method for phosphorus; C. W. G ke, University of Missouri, a fl photometer method for potass and P. A. Greene, Allied Chem and Dye Corp., will discuss samp pressure fertilizer solutions. The nual address of the president of AOAC, K. D. Jacob, U.S. Departm of Agriculture, Beltsville, will "Twelve Decades of Commercial tilizers."

The association's annual banqu be held Oct. 15 at the Shore Hotel will honor Dr. Wiley. Dr. F rick L. Hovde, president of Pur University, will be the featu speaker at the banquet. Dr. W was the first professor of chemi at Purdue and state chemist of diana before he became chief che of the bureau of chemistry of Department of Agriculture.

All sessions are open to intere scientific workers and to the pu Copies of the complete program be available about Oct. 1 from secretary, William Horwitz, Box Benjamin Franklin Station, Wash ton 4, D.C.

The AOAC meeting will be fol ed by meetings of the American control officials, fertilizer control ficials and pesticide control offic

William F. Hall, Chipman Sales Executive, Retires

BOUND BROOK, N.J.—Chip Chemical Co., Inc., Bound Br N.J. has announced the retiren of William F. Hall, sales mana agricultural division, after 26 y of service.

A farewell luncheon was g Mr. Hall by the company when n erous gifts were presented. Mr. is at home in Sarasota, Fla. B chard J. Smith, vice presiden charge of sales, will assume Hall's duties.

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INSECT, PLANT DISEASE NOTES

Fruit Worm Invades Colorado Tomato Fields

FORT COLLINS, COL.—The tomato fruit worm has hit hard in southeastern Colorado tomato fields.

In Prowers, Las Animas, Bent, Otero and Pueblo counties late in August egg deposition reached 2.4 eggs per 100 tomato leaves, according to the weekly report of the Colorado Insect Detection Committee. For the same period last year, the number was .6 per 100 leaves.

Dr. L. B. Daniels, committee chairman and chief entomologist for the Colorado Agricultural Experiment Station, said development of the tomato fruit worm is about 10 days ahead of last year, and growers throughout the state should be on the lookout for it. Immediate and thorough treatments with insecticides are very important, Dr. Daniels said.

In Saquache and Rio Grande counties, the pea aphid has caused considerable damage, according to the committee. There still is no sign of the spotted alfalfa aphid, however.

A survey for indications of the spotted alfalfa aphid shows Mesa County has the greatest infestation, with 2500 aphids per 100 sweeps. Lesser populations were found in Montezuma, La Plata, Montrose and Delta counties.

In Larimer County, the pear slug is causing severe damage in sour cherry orchards, the committee reported.

Hay Insects Noted In Maryland

COLLEGE PARK, MD.—Garden fleahoppers both nymphs and adults have injured red clover in Anne Arundel County, and were found on alfalfa in St. Mary's County. Other insects found on red clover include tarnished plant bugs, yellow clover aphids and rapid plant bugs. Pea aphids are light and potato leafhoppers averaged 4 per sweep on alfalfa in St. Mary's County.

Tobacco hornworms and budworms continue to do damage to tobacco in St. Mary's County.—Theo. L. Bissell and W. C. Harding, Jr.

Cereal, Forage and Fruit Insects in Florida

GAINESVILLE, FLA. — Rhodes grass scale in adult stage was infesting St. Augustine grass at Orlando, Orange County. Specimens were collected from two lawns.

Lesser cornstalk borer in larval stage was collected on field peas at Quincy, Gadsden County. Not too serious as heavy rains and insecticide treatment seem to be giving good control. This is the first infestation reported this year.

Tropical sod webworm in larval stage averaging 20 per square foot of sod out of 3 square feet inspected was collected on St. Augustine grass at Lakeland, Polk County.

A cerambycid in larval stage was collected from orange and grapefruit trees planted on an established lawn at Starke, Bradford County. Seven trees were reported to be infested. Echo moth in larval stage was collected from guava at Miami, Dade County.

A geometrid in larval stage was collected from gooseberry tree at W. Miami, Dade County. Avocado leaf roller and an olethreutid (unknown sp.) in larval stage were collected from avocado at N. Miami, Dade County.

An olethreutid in larval stage was collected on avocado at Miami, Dade County. Two hundred specimens were found on one plant. Owlet moth in larval stage was collected on guava at N. Miami, Dade County. On one plant 75 specimens were found. Corn earworm in larval stage was collected from Temple orange at Clermont, Lake County. Only 3 specimens were found in one acre inspected.

Alope sphinx in larval stage was collected on papaya at Ft. Pierce, St. Lucie County. Three specimens were found. Fruit scarring worm in larval stage was collected on kumquat at Ft. Pierce, St. Lucie County. Five specimens were collected on one four ft. tree.—H. A. Denmark.

USDA Issues Leaflet On Alfalfa Aphid

WASHINGTON — A new 8-page leaflet, describing methods for control of the alfalfa weevil, major pest of the nation's most valuable hay crop, has been published by the U.S. Department of Agriculture.

Leaflet No. 368, "The Alfalfa Weevil: How to Control it," describes the pest's way of life and discusses its control through proper crop management and use of insecticides. This publication, written for alfalfa growers in both the East and West, recommends special practices for each of the two regions.

One new approach to weevil control mentioned is by a small, black wasp that often kills 80 to 90% of early-season weevil larvae in the western states. This wasp is being introduced into some eastern areas infested by the alfalfa weevil.

Precautions in handling insecticides are also covered, including necessary waiting time before livestock are grazed on sprayed or dusted alfalfa. Single copies of the leaflet may be obtained free from the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

Late Blight Reported In U.S. and Canada

WASHINGTON — Late blight in several areas of the U.S. and Canada is reported by Paul R. Miller, principal pathologist, plant disease epidemics, Agricultural Research Service, U.S. Department of Agriculture. in the Sept. 7 issue of USDA's Plant Disease Situation.

Potato late blight has been found from the warmest part of Pennsylvania (southern York County where one field was killed by late blight and several others infected) to the east, north and west boundaries of the state. It is felt that late blight is either present in all counties or soon will be. Tomato late blight has been found in eight counties in the east-central part of the state. It is severe in a few counties in this area.

On Aug. 28 late blight was present in slight to moderate amounts in red kotes and burbanks southwest of Albert Lea, Minn. On Aug. 29 a trace amount of the fungus was active on red pontiacs at Owatonna, Minn. On Aug. 30 late blight was found in cherokee potatoes in trace to slight amounts east of Albert Lea.

Late blight was found in western Nebraska Aug. 24. The fungus was active on an unsprayed field near Bridgeport.

In Ohio late blight had become generally distributed on potatoes in the Wooster area. It was quite severe in some fields that had not been sprayed properly, and it had completely defoliated vines where they had not been sprayed at all.

Late blight of potatoes has developed in a general way in York County and in the Woodstock and Hartland areas in Carlton County in British Columbia. Late blight of potato is general in the province on unsprayed fields.

Alfalfa Insects Active in Kansas

MANHATTAN, KANSAS—Spotted alfalfa aphid infestations ranged from non-economic to heavy in alfalfa fields in the following northwest Kansas counties: Osborne, Rooks, Graham, Sheridan, Thomas, Rawlins, Cheyenne, Sherman and Wallace.

Similar degrees of infestation were also found in the following counties of west central and southwest areas: Greeely, Hamilton, Kearney, Finney, Gray and Ford. Non-economic to moderate infestations were found in Edwards, Barton, Ellsworth and Saline counties, central Kansas.

The localized heavy infestations were found widely scattered throughout the western third of the state that was surveyed. Honey dew was found in all of the heavily infested fields. Infestation rates varied greatly and each field presented a different problem.

Some fields had ladybeetle and lacewing populations that appeared to have the aphids under control; others with high aphid populations had practically no aphid predators present. Aphid counts varied from 4 per sweep to over 800 per sweep. Ladybeetles and larvae ranged from 0 to 15 per sweep, and lacewings from 0 to 8 per sweep. Alfalfa seedlings growing in southern Rawlins County, northwest, were lightly infested with spotted alfalfa aphid colonies.

A survey of alfalfa fields in Riley County, northeast, showed alfalfa plant bug populations averaging about one per sweep (based on average of ten sweeps). Tarnished plant bug populations averaged one adult per sweep in these same fields. Alfalfa plant bug counts in alfalfa fields in northwest Kansas counties ran from 1 to 4 per sweep.

Light to threatening population grasshoppers were found in local areas of northwest and west cen Kansas. Populations appeared lo than found last year at this ti however, those 'hoppers present w concentrated along roadsides and margins. Loss of seedling wheat a the edges of some fields in local areas may again be expected in s of the western counties.

Counts ranged from 5 to 15 gr hoppers per square yard, with centrations in localized areas of vored habitat. No parasitized gr hoppers were observed in the no west Kansas survey.

Non-economic to threatening gr hopper populations were observed localized areas of the following sou west Kansas counties: Greel Hamilton, Kearney, Finney, G Ford and Edwards. Populations w confined to roadside margins along the edges of fields being p pared for fall wheat plantings.—D Matthew.

Tomato Fruit Worm Abundant in Indiana

LAFAYETTE, IND.—Purdue U versity entomologists have repor that the present tomato crop threatened by a possible heavy festation of the tomato fruit wo According to Dr. John V. Osm head of the department of entom ogy at Purdue, the adult moths this fruit worm are becoming usually abundant.

Special light traps used for sa pling insect populations in Tip canoe and Lawrence counties ha been catching enormous numbers this moth.

Fall Caterpillars In South Carolina

CLEMSON, S.C.—Fall caterpill are damaging several crops in Sou Carolina—soybeans, snap beans, co peas, fall tomatoes, grain and oth types of sorghum, late corn and c ton.

Specialists of the Clemson en mology and plant disease extensi work point out that there is consid able confusion as to the species, l history, habits, and controls of t caterpillars damaging the respect crops. In their Insect and Plant D ease Notes, they give the follow brief statements on the vario species.

The velvetbean caterpillar, wh does not overwinter in South Carol but blows or flies in from the tropi is now present in the coastal sect and can be expected in most soybe growing communities this season. also infests kudzu, velvetbeans a peanuts.

Three species of armyworms a present and are increasing in th state — fall armyworm, armywor and yellow-striped armyworm Damage has recently occurred fescue in Anderson County and pasture grasses and sorghum Saluda County.

The corn earworm affects virtua all crops grown in the state and h been more numerous on cotton a tobacco perhaps than ever befo Light trap reports indicate ma moths are still present. These bla light traps are operated by resear entomologists at Clemson, Charlest and Florence.

The lesser cornstalk borer is fou in silken webs below ground. It now reported damaging soybea snap beans, cowpeas, grain sorghu and peanuts.

Highlights from the Sept. 5 Sou Carolina insect and plant disease port:

Caterpillars, including velvetbe caterpillar, are building up on so beans in Allendale County. F caterpillars noted in Bamberg, C houn and Clarendon.

Grain sorghum is being severe

Control Measures Pay Extra Dividends

FORT COLLINS, COLO.—Crops which received insecticides earlier in the season are now paying extra dividends in northeastern Colorado.

Fields of potatoes, beans, sugar beets and corn that were sprayed or dusted for insect control all show better yield and quality than the untreated crops, according to Dr. L. B. Daniels, chief entomologist for the Colorado Agricultural Experiment Station and chairman of the Colorado Insect Detection Committee.

Potato growers who dusted early and consistently for psyllid are now getting between 300 and 400 sacks per acre, Dr. Daniels said. In untreated areas adjoining potato fields psyllid populations have been, and still are, very high on buffalo burr, matrimony vine, ground cherries and bind weed, showing the value of the insecticide.

As a result of psyllid control measures, Dr. Daniels said damage from the tuber flea beetle and the wire worm in potatoes has been lessened considerably.

Excellent control of the Mexican bean beetle has been obtained by application of insecticides, Dr. Daniels said. Proper timing and thoroughness of application have paid off, he added.

In sugar beets, Dr. Daniels said recommended insecticides have given effective control of the sugar beet webworm. Growers in Weld and Larimer counties have reported losses from the sugar beet root maggot, although this is frequently confused with losses attributed to Rhizoctonia, he explained.

...ged by lesser cornstalk borer in ...enville County. Unidentified cater... probably fall armyworm, is ...ously damaging grain sorghum in ...berg County.

...osaic and lesser cornstalk borer ...ffecting cowpeas planted for can... at Florence. Pecan insect and ...ase damage is at low ebb.—J. H. ...hran.

...tton Insects ...tive in Tennessee

...NOXVILLE, TENN.—Picking op...tions are now (Sept. 9) in full ...g in all hill cotton. Low land ...on is beginning to open faster ... some picking is being done in ...e fields.

...oll weevil adults are still present ...large numbers in the fields that ... have some green growth, in the ...thern section of the state. There ... more adults present in the fields ...this time than there have been ...e the bad weevil year of 1950. ... adults continue to be very active ... are destroying the young bolls. ...opulations will still continue to ...rease due to the large number of ...ae that are present in the fallen ...ares. Control measures are still ...g carried out in some of the ...remely heavily infested fields in ...er to keep damage to the older ...s at a minimum.

...he boll worm is still causing con...erable damage in the southern ...tion of the state. Both large and ...ll size worms are being found at ... time. The heavier damage is con...d to the weevil infested areas.

...pider mites are causing complete ...oliation in some fields but infes...tions are too late to cause any ...nage at this time. Aphids are be...ning heavier throughout the area ...rank cotton. Infestations should ...watched closely to prevent pos...e damage to the lint of the open ...ton from aphid honeydew. This is ... final weekly report for this sea...—R. P. Mullett.

...REEN PASTURES WINNERS

...BURLINGTON, VT.—David W. ...tchelder, Stowe, Vt., took top hon... in the 1956 Vermont Green Pas...es Contest. Arthur Packard and ..., Jericho, was in second place and ...lph and Everett Maynard, More...wn, took third.

H. B. DeVinny

...AFETY SPEAKER — H. B. De...nny, director of industrial relations ... the Davison Chemical Co. divi...on of W. R. Grace & Co., Baltimore, ...ll be one of the speakers at the ...eeting of the Fertilizer Section, Na...onal Safety Council, to be held Oct. ...-23 at the La Salle Hotel in Chi...go. He will talk on "Safety Is Top ...anagement's Concern" at the Oct. ... session. A native of Minnesota ...d graduate of the Wharton School ... Finance and Commerce, Univer...y of Minnesota, Mr. DeVinny ...ined Davison in 1941 and has been ...his present post since 1950.

Rain Fails to Mend Crop Damage in Mid-South Area

MEMPHIS—Rain came too late to mend damage done to Mid-South crops by the drouth and hot winds, farm officials said last week.

Extension officials in Arkansas, Mississippi, Missouri and Tennessee reported crops improving, but the damage cannot be fully recovered.

The Mississippi Agricultural Extension Service said the drouth and hot winds cut the cotton crop in the state by 25 to 30%. T. M. Waller, Mississippi extension cotton specialist, said the drop is the result of too small bolls and premature opening of bolls.

Pecan crop prospects are improved, according to Chesley Hines, Mississippi extension horticulturist. Recent rains have boosted pecan quality. Shuck worm damage is not as serious as last year. In the southern part of the state scab disease is serious.

Many dairy farmers are planting small grains for fall and winter grazing, said W. R. Thompson, extension agronomist.

A. G. Bennett, extension entomologist, reported soybeans are being damaged by army worms and cabbage loopers. Army worms also are attacking late temporary pastures and new stands of small grains.

Southeast Missouri farms will produce almost as much cotton per acre as last year, J. T. Rollins, assistant county agent at Caruthersville, predicted.

While slightly more than a bale per acre was harvested last year, the assistant county agent forecasts an average of almost a bale per acre this fall.

Although recent rains in West Tennessee have generally improved crops, they were mostly too late to repair damage done by hot, dry weather, H. T. Short, district farm agent at Jackson, said.

The cotton crop is expected to fall slightly short of the general expectation of several weeks ago, he said. In spite of adverse weather, however, picking and ginning have begun earlier this year.

Timely showers and cooler weather have improved prospects for late maturing crops in most sections of Arkansas, the Federal-State Crop Reporting Service said.

PURDUE BULLETIN

LAFAYETTE, IND.—Only a few basic concepts need to be understood for the farm operator to diagnose plant nutrition problems. That's the opinion of A. J. Ohlrogge, Purdue agronomist and author of a Purdue bulletin, "Soil and Plant Tissue Tests." Mr. Ohlrogge says the usual run of soil and crop problems can be taken care of by the user of soil and plant tests. Listed in the new bulletin are some basic plant, soil and fertilization concepts.

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Aldrin may be used on 91 raw agricultural commodities. It is noted for its fast kill. And aldrin is recognized as an outstanding insecticide for soil insects. Aldrin is economical—mere ounces per acre give dependable control.

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Endrin may be used on 10 raw agricultural commodities. Although comparatively new, it is now recognized as a top control for hornworms and budworms on tobacco. On cotton, it controls many insects that formerly required a combination of insecticides. In addition, endrin is federally registered for the control of insects attacking sugar beets, cabbages, tomatoes, peppers, potatoes, eggplants, and cucumbers. Endrin is both long lasting and fast acting. And like aldrin and dieldrin, it is economical . . . mere ounces per acre give dependable control.

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SHELL

Late Dormant Period Is Right Time to Feed Trees by Spraying Bark, USDA Says

WASHINGTON — Trees grown on soil deficient in certain micronutrients—minerals required in minute amounts—can best be fed some of these essential elements through their bark by applications made late in the dormant period, just before spring growth starts, say scientists of the U.S. Department of Agriculture.

Recent studies at USDA's Agricultural Research Center, Beltsville, Md., show that nutrient sprays will enter dormant trees only through pruning wounds and other breaks in the bark—but not through uninjured bark. Absorption of nutrients through healthy bark occurs only after growth starts.

Deficiencies of micronutrients occur in many scattered soils in western irrigated areas and along the Gulf and Atlantic Coastal Plains.

Foliar sprays are an effective means of applying nutrients, but some sprays—including those containing zinc and iron—cause severe foliage burn on some species under most conditions, USDA says. Since these two elements are among those that can't be supplied through some soils, late dormant spraying is a practical solution. That makes it important for growers to know when trees are ready to take in the bark sprays.

The Beltsville research indicates that the best time to apply nutrient materials and avoid injury to leaves is just before tree growth starts. There is then a minimum chance of the material being washed off before absorption through the bark can occur.

C. P. Harley, plant physiologist, and coworkers of USDA's Agricultural Research Service discovered that bark feeding works best when trees are growing, by treating apple trees at Beltsville with needed mineral elements and then testing the trees' tissues for evidence of these elements.

The treatments were made with nitrogen (from urea), phosphorus (from radioactive potassium acid phosphate) and rubidium (from radioactive rubidium chloride). The compounds were painted in bands around the branches of trees, and tests were made periodically in various tissue layers in the treated zone and at various distances up and down the branches.

The scientists believe that the principles of bark feeding discovered in tests with nitrogen, phosphorus and rubidium also gover tree's receptiveness to zinc, i and other minor elements t would normally be supplied by b feeding.

None of the elements tested w found beneath the uninjured dermis of treated trees during Fe ary. They did appear in phloem xylem tissues where the bark been scraped or cut, although th was no translocation of the elem at this time.

Early in April, however, w flower buds were in the green-tip cluster stage, but vegetative b were still tight, substantial amou of the nutrients showed up bene normal bark that had been treat even some distance from the p where applied. Scraped or cut s faces absorbed much more of the n terials, and frozen bark took in so what less. It was clear that penet tion in uninjured bark doesn't oc until the tree is growing.

Rainwater, dew and the norm moisture which transpires outw through the bark, dissolve the nu ent salts and wash them throu longitudinal and transverse cracks the tree's absorptive phloem tissu When growth starts, the materi move inward and radially to the ternal transport channels that ca nutrients upward and downward the tree.

The nutrients showed up in bu and shoots first. In mid-April great concentration was in the flower bu At the end of April, the material w most concentrated in the rapid growing young terminal leaves.

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Stauffer Chemical Makes Appointments To Technical Staff

NEW YORK — Several appoin ments have been announced Stauffer Chemical Co.

Don C. Force has joined the co pany as an entomologist and will located at Stauffer's agricultur laboratory, Mountainview, Cal.

Mr. Force holds A.B. and M.S. d grees from the University of Calif nia at Davis, Cal. Prior to joini Stauffer, Mr. Force was a laborato assistant in the department of e tomology at the University of Ca fornia at Davis.

Gregory Schultz has joined Stauff as an industrial engineer. He will located at Stauffer's Niagara Fal plant.

Mr. Schultz holds an A.B. degr from Columbia College and a B.S. d gree in industrial engineering fro Columbia Engineering School. Pri to joining Stauffer, Mr. Schultz he the position of methods and plannin engineer for E. I. duPont deNemou at Richmond, Va., and served in th same capacity for duPont at Ea Chicago, Ind.

Lothar E. Geipel and James Kerrigan have joined the company research chemists and will be locate at Stauffer's Richmond (Cal.) r search laboratory.

Dr. Geipel holds a B.S. degree fro the Illinois Institute of Technolog an M.A. degree from the Universit of Illinois, and received his Ph.D. d gree from the University of Iowa th year.

Dr. Kerrigan holds B.A., M.S., an Ph.D. degrees. Prior to joining Stau fer, he worked at the Ames Labora tory, Atomic Energy Commission, an as research assistant at the Univer sity of Chicago.

IMC DIVIDEND

CHICAGO — The board of direc tors of International Minerals Chemical Corp. has declared th regular quarterly dividend of $1 share on the 4% cumulative pre ferred stock of the corporation an a quarterly dividend of 40¢ a shar on the common stock of the corpora tion, both dividends payable Sep 30, 1956, to stockholders of recor Sept. 20, 1956.

itrogen Boosts ield of Irrigated orn in Iowa Test

AMES, IOWA—Highest corn yields e obtained by supplementing irri- ion with adequate nitrogen in an igation experiment conducted by a State College researchers on the y Shoemaker farm, located near llas in Marion County, Iowa.

John Pesek, experiment station onomist, reports that the experi- ental area included two adjoining lds, each with a different cropping tory. In one field, corn following n was planted. In the other, corn s planted on ground that had been soybeans the previous year.

Each of the two fields contained a mber of test plots on which the searchers compared the effects of rogen levels on yield, without and th irrigation. On all the irrigated ts a total of 4½ inches of water s added in two separate applica- ns.

Where corn followed corn and with- t added nitrogen, there was virtual- no difference in average yield per re between nonirrigated (46.9 bu.) d irrigated (47.8 bu.) plots.

However, adding nitrogen at the ate of 160 lb. per acre to non- rrigated plots boosted the yield rom 46.9 to 87.1 bu. The average ield increased to 103.1 bu. with he combination of added nitrogen lus irrigation.

Where corn followed soybeans, non- rigated corn yielded an average of 5 bu., compared with 87.3 for irri- ted corn. When nitrogen was added 60-lb. rate per acre), the average ld with no irrigation was 101.6. ith both irrigation and added nitro- n, the average yield was increased 110.1 bu.

The best yield response from the mbination of added nitrogen plus rigation was on land where corn llowed corn. Here the yield jumped om 46.9 to 103.1 bu., an increase of 2 lb. Where corn followed soy- ans, the average yield increase om irrigation and added nitrogen as 40.2 bu.

Mr. Pesek explains that the lower sponse to irrigation and the added itrogen application where corn fol- wed soybeans is attributed, at least part, to the fact that the previous oybean crop took less moisture from he soil than did the previous corn rop.

Also, nitrogen contributed by the revious soybean crop had a notice- ble effect on the following corn crop. Supplementing the lower moisture nd nitrogen levels of the corn-fol- owing-corn ground with both irriga- ion and nitrogen, produced the high- st average yield response in the ex- periment.

Nitrogen Division Schedules Field Days

INDIANAPOLIS—Nitrogen Divi- sion of Allied Chemical & Dye Corp. has announced two Arcadian Uran field days, to be held at the Charles Schenk farm near Vincennes, Ind. Sept. 18 and at the Lester Pfister farm near El Paso, Ill. Sept. 0.

At both field days Dr. Lloyd Fred- ricks, soil microbiologist, Iowa State College, will speak on "Soil Microbes nd Plant Residue Decomposition," nd Howard W. Lathrope, Allied Chemical & Dye Corp. agronomist, will discuss "Ways to Cut Production Costs."

Maynard Bertsch, WLS Prairie Farmer, will be program chairman for both events. Each will start at 0 a.m. and run until 3:30 p.m.

At each stop the host farmer will talk on "Low Cost-High Yields-Soil Improvement - Continuous Corn." There will be tours of the farms and demonstrations of Arcadian Uran ap- plication.

North Carolina Sales In 1955-56 Below Those of Year Earlier

RALEIGH, N.C.—Fertilizer ton- nage in North Carolina during the fiscal year ended June 30 totaled 1,- 649,449 tons, compared with 1,830,633 tons the previous fiscal year, accord- ing to the State Department of Agri- culture.

The 1955-56 total included 1,325,- 785 tons of mixed goods and 292,685 tons of materials.

Leading grades of mixed goods were 4-10-6, 226,911 tons; 3-9-6, 219,- 648 tons; 5-10-10, 204,549 tons; 3-9-9, 201,733 tons, and 2-12-12, 144,394 tons. Sales of materials included 107,- 245 tons of nitrate of soda and 103,- 684 tons of ammonium nitrate-lime mixture.

Sales in the state during July of this year totaled 14,986 tons, com- pared with 12,417 tons in July a year ago.

R. L. Logan Named Manager of IMC Niagara Falls Plant

CHICAGO—R. L. Logan has been appointed manager of the Niagara Falls electrochemical plant of the potash division of International Min- erals & Chemical Corp., it has been announced by Nelson White, vice president in charge of the division. He succeeds Charles H. Berle.

Mr. Logan has been assistant man- ager of the Niagara Falls plant since November, 1952. He joined Interna- tional in 1951 as a process engineer in the corporation's engineering divi- sion headquarters in Chicago. In that capacity he acted as project engineer for the division's magnesium oxide- hydrochloric acid plant at Carlsbad, N.M., and for the Atomic Energy Commission section of the corpora- tion's phosphate chemicals plant at Bonnie, Fla.

Prior to becoming associated with International Mr. Logan had gained 10 years experience in the chemical industry, working for A. E. Staley Manufacturing Co., Goodyear Syn- thetic Rubber Corp., Goodyear Tire & Rubber Co. and the J. B. Watkins Co.

He holds a degree in chemical engi- neering from the University of Min- nesota, from which he was graduated in 1939.

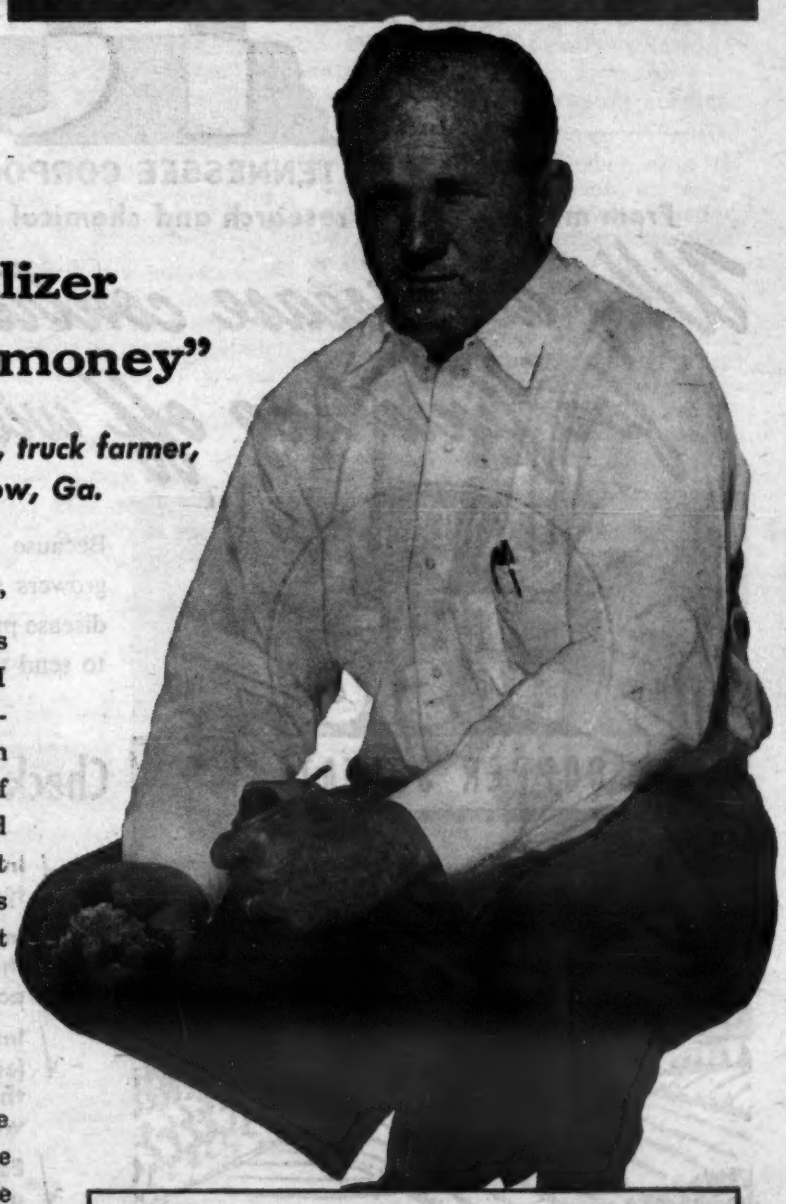
Beaird Retirement Plan

SHREVEPORT, LA.—A compre- hensive retirement plan, paid entire- ly by the company, has been estab- lished for all employees of the J. B. Beaird Co., Inc., Shreveport, J. Pat Beaird, president, has announced. The retirement plan covers all reg- ular fulltime employees and is based on each employee's years of service with Beaird and his income at the time of retirement, plus life and dis- ability benefits.

HOW UNION MULTIWALLS BUILD MORE BUSINESS FOR THE FERTILIZER INDUSTRY

"Now I know... cutting down on fertilizer actually costs me money"

John Patrick, truck farmer, Marlow, Ga.



"I've known about fertilizer for a long time," says John Patrick, who with his brother Carl runs a 100-acre truck farm near Marlow, Ga., "but I didn't realize that every *dollar* invested in fertilizer can bring a farmer a *four dollar* return in crop value! That's how the U. S. Department of Agriculture figures it. Like a lot of farmers, I'd tried to *save* money by cutting down on fertilizer, but actually I was *losing* money, as I got lower yields on my crops. Now I know fertilizer is my best investment."

Union's information program increases fertilizer use

Mr. Patrick discovered his "profit formula" in one of the farm magazines he reads. The article was one of many prepared by Union as part of a countrywide newspaper-radio-television educational campaign to help farmers use more scientific methods.

One of the main purposes of this program is to show your customers how to make the best use of fertilizer. As one of the major manufacturers of Multiwall paper sacks for fertilizer, Union is happy to make this contribution to the industry.

Mutual Fertilizer Company is one of the many leading manufacturers who package their products in Union Multiwall bags.

Mr. Charles Ellis Jr., President, Mutual Fertilizer Company, Savannah, Ga.

"I believe Union's informatio. program on the scientific use of fertilizer will help the farmers. Union does as well with its Multiwalls as it does with its fertilizer program. We use Union Multiwalls. They're among the best."

UNION Multiwall Bags

union camp

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WORLD REPORT

By GEORGE E. SWARBRECK
Croplife Canadian and Overseas Editor

The chemical industry has led Italy's economic development since the end of World War II, and the fertilizer industry has played its share in this development, according to a report furnished by Italian trade sources.

The manufacture of sulfuric acid is increasing at a remarkable pace—the 1955 production was an all-time high at 1,953,720 metric tons, an increase of 7% over the previous year —, and much of this increase was sparked by the greater demand from the fertilizer manufacturers. Last year also saw increases in the production of nitric acid and of ammonia. The production of calcium carbide also increased by 8% last year, mainly to meet the needs of the calcium cyanamide trade.

Fertilizers now hold first place in the chemical industry's export picture and this trend is expected to continue. Allied to this is an ever-increasing demand from domestic consumers in line with the improvements made in agricultural methods.

Several new plants for the manufacture of nitrogenous fertilizers have started up in the past three years, including two, at Novara and Ferrara, which are described as "ultra-modern." In 1955, production of this type of fertilizer jumped 12% over the previous year, with ammonium nitrate showing the biggest upward swing.

On the debit side of the picture, the output of phosphate fertilizers in 1955 remained level with that of 1954 while exports of superphosphate dropped 33%. As in other countries, great progress was recorded by the urea side of the business and exports jumped 400%. Insecticides and pesticides are showing a good demand, too, the trade states.

Favorable Points

There has been some criticism of the fact that the Italian industry is a near-monopoly because 80% of it is controlled by the Montecatini firm. However, this tight control has its favorable side, since it has been possible to make some major investment in the industry. Aided, too, have been the constant modernization a rationalization of plants and train of technicians.

Italy is rich in natural resource and Montecatini has been quick take advantage of this. Hydroca bons, sulfur, pyrites and sodiu chloride are particularly plentifu

Italian know-how is such that o er countries are calling upon Montecatini firm to provide tech cians and advice for the establis ment of local industries, and in so of these the Italians are taking p cels of stock.

As the export trade increases, a interests are taken in other wo developments, there is a possibili that Montecatini will tie-up a lar share of the world fertilizer tra observers say.

Flotal

The Italians hold out great hop for the product known as "Flotal sometimes erroneously referred to a fertilizer. The Italians say cat gorically that it is not a fertiliz According to its producers it has t property of making clay soil capab of absorbing and holding water that, and no more.

Experiments made in Sardinia ha been described as successful. The are other products on the mark with similar characteristics but the tend to be expensive. The Italian hope to produce "Flotal" more cheap ly and they think that success wi increase its importance as an expor item.

New Aircraft

A new aircraft, designed specifica ly for agricultural work, made it maiden flight from an airfield nea Abridge, Essex, England, at the en of August.

Known as the Edgar Percival EP 9, the first model has been ordered by the Manawatu Aerial Top Dressing Co. of New Zealand and it will be used to drop fertilizers to open up barren land for grazing. Several more are on order for New Zealand firms and other countries have expressed interest.

The manufacturer hopes to pro duce 150 planes next year. Com pletely equipped for agricultura work, the plane costs a little under $29,000.

German Potash

Western Germany is aiming at rec ord exports of potash fertilizers this year. Despite an output second only to that of the U.S., Western Ger many still lags in its export field behind Eastern Germany.

In the fertilizer year ended April 30, 1956, Western Germany exported 700,000 tons of potash fertilizer out of a total production of 1,670,000 tons. In contrast, Eastern Germany exported one million tons out of a production of 1.6 million tons.

U.K. Subsidy

The British government recently increased fertilizer subsidies. Of the money allocated for this purpose, just over 50% goes to nitrogen and the remainder to phosphates.

Kansas Elevator Destroyed by Fire

ELSMORE, KANSAS—The elevator of Cox Grain Co., fertilizer dealer here, was destroyed by fire Sept. 10 of undetermined origin at 10:30 a.m. The blaze broke out in the lower level of the elevator which is owned by R. L. Cox of Iola. The elevator contained fertilizer, wheat and milo. Local volunteer firemen formed a bucket brigade using water from wells to fight the blaze until units of the Iola fire department could make the 25 mile drive. No estimate of the damage was made. A railroad depot, three houses and a garage were also damaged.

DUST MIXERS—FORMULATORS—CUSTOM SPRAYERS—GROWERS

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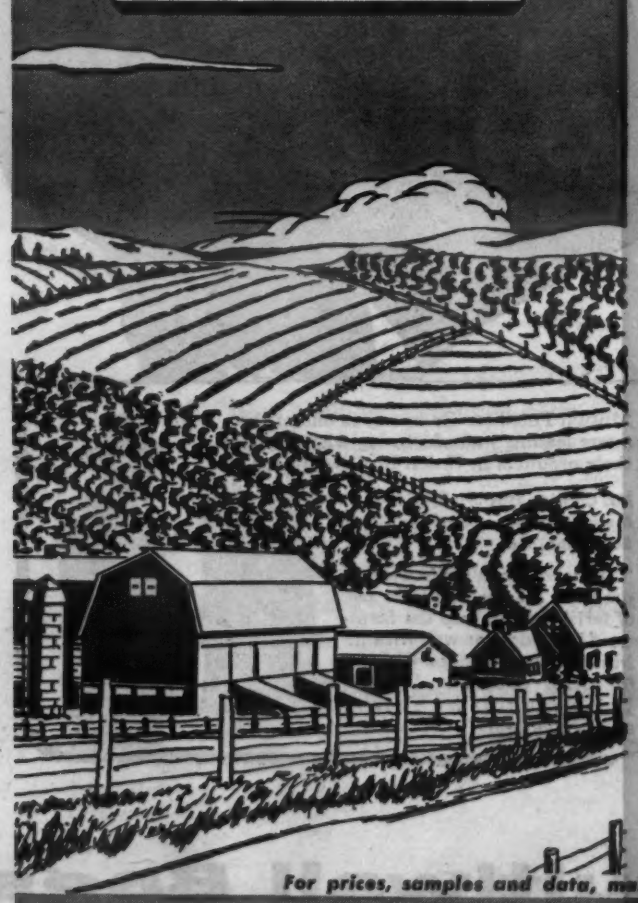

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A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

SCONSIN DEALER—Stanley Fisher, owner of Fisher's Store in Sun irie, Wis., is shown above standing near a new sidewall display of pesti-s. Price placards on the shelf dividers encourage customers to browse and e themselves. Mr. Fisher reports that a store remodeling project has ped up sales.

LES INCREASE

Visconsin Retailer Peps Up tore With Remodeling Job

By AL P. NELSON
Croplife Special Writer

fter 25 years in the feed and fer-er business, Stanley Fisher, er of Fisher's Store, Sun Prairie, ., remodeled his place of business ng the past year and got an ad-onal 30% more display space reby. This increased display space resulted in more sales.

he remodeling program gave Mr. ner a fine, modern store front of visual type. Customers can now right into his store from the walk level, and many are induced come in and look at the fine dis-s. Merchandise can also be dis-ed up to the window level, Mr. ner states. The overhead fluores-t lighting helps to make all mer-ndise show to best advantage, ecially on dark and cloudy days.

"Most of our remodeling effort d expense went into the first 25 t of the store," states Mr. Fish-. "It gave us a new front, some w islands and new wall displays. ther than put in any new lines just increased our displays of ds, fertilizers, insectic'des and ngs like that. We are in a won-rful farming area, and here is ere items like this sell."

ne of the new sidewall disp'avs ell stocked with insecticides. Mr. ner keeps insecticides on these ves the year around, he says, be-se farmers buy them early in the r. He also uses plastic price tags the shelf dividers, so that cus-ers can easily spot the price of item. This helps promote self ice sales.

One advantage of using price tags this is that they encourage wsers to step up and inspect the chandise and select their own, if want to," says Mr. Fisher. "This s speed service on busy days."

rs. Fisher put in a department of own during the remodeling pro-n. She settled for a garden sup-s section where garden tools, ed plants, planters and plant food sold. She says that she has done well with potted plants and planters and seeds. These are items which attract many home owners and gardeners, many of whom buy plant food and larger quantities of garden fertilizer.

"Winter is the slow season on fertilizers," she says, "and so the potted plant and planter sales come in handy. They go very well for the Christmas season, when people want to brighten their homes at little cost. Quite a number of the potted plants and planters are given as gifts during the holidays."

There are a number of airplane spraying outfits in the area, and Mr. Fisher sells insecticides to the owners. In addition, he visits farmers in the area when he has time and books orders for fertilizer in fall and spring.

"We are well satisfied with our remodeled store," states Mr. Fisher. "I wish we would have done this five years ago, because we can see how it has given us more display space and increased our sales. Customers also like a new bright store. This is especially true of women who buy many of the garden supply items."

SHOP TALK

OVER THE COUNTER

FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

Dealers who do custom fertilizing, dusting and spraying find that various factors influence the rates they charge, the results being variations within a state and sometimes even in a particular area.

Some of the factors a dealer must consider in setting custom rates are: Variation in size, shape and topography of field; texture and condition of soil; thoroughness of the job and services rendered; crop yields; competition which comes from the ratio of available jobs to interested contractors, neighborhood customs and family relationships. The list is not complete; there are other important factors.

Oklahoma's 48 counties were surveyed by the extension service to determine the custom rates for a wide number of farm operations, including seeding-fertilizing and dusting and spraying. Custom rates for the latter operations are listed in a table below.

The information in the survey was grouped by areas in which practices and rates tend to be similar because of similar conditions on farms. Rather wide variations were reported among the various counties.

Benefits to Farmer

The Oklahoma report states that "farmers should hire custom operators whenever it will be to their advantage to do so." The report continues: "Determining when this is the case is not, however, an easy matter. Benefits from hiring particular jobs done may come in a number of forms. On the surface it may appear that since the custom operator is in the business to make a profit for himself the farmer can also make money by doing the job himself. This is not always true of course, because 'total cost' is made up of two parts, 'fixed costs' and 'variable or operating costs'. Fixed costs are made up of such items as taxes, interest on the investment, insurance, that part of depreciation which becomes a reality

(Continued on page 16)

Custom Rates in Oklahoma

	Panhandle		Northwest		Southwest		North Central	
	Usual	Range	Usual	Range	Usual	Range	Usual	Range
SEEDING, FERTILIZING:								
Drill grain, acre	.75	.75- .85	.75	.50-1.00	1.00	.65-1.00	1.00	.75-1.00
and fertilizer, acre	...	....	1.25	1.00-1.50	1.25	1.10-1.50	1.70	1.00-2.50
Drill alfalfa & clover, acre	1.00	.75-1.35	1.15	.75-2.00	1.00	.75-1.50	1.50	1.00-2.00
and fertilizer, acre	...	....	1.75	1.00-3.00	1.25	1.00-2.50	1.60	1.25-2.00
Plant row crops, acre	1.25	1.00-1.50	1.25	1.00-1.50	1.75	1.00-1.75	2.00	....
and fertilizer, acre	...	....	...	....	1.80	1.25-2.50	2.00	....
DUSTING AND SPRAYING:								
Cattle, material furnished, animal	.15	.10-. 20	.10	.05- .10	.15	.10- .17	.15	....
Crops, no material furnished								
Spray, air, acre	...	1.00-1.50	1.00	....	1.50	.85-2.00	1.00	....
Spray, ground, acre	1.00	....	1.00	....	1.00	.75-1.50	.75	....
Dust, air, acre	...	....	1.00	....	...	1.00-1.75	1.00	....
Dust, ground, acre	...	....	1.00	....	1.00	.75-1.50	1.50	....

	Central		Northeast		Southeast	
	Usual	Range	Usual	Range	Usual	Range
SEEDING, FERTILIZING:						
Drill grain, acre	1.00	.80-1.50	1.00	1.00-1.50	1.00	1.00-1.25
and fertilizer, acre	1.50	1.25-2.00	1.50	1.00-2.00	1.50	1.00-2.50
Drill alfalfa and clover, acre	1.25	.75-1.50	1.50	1.00-1.50	1.50	1.00-2.20
and fertilizer, acre	1.50	1.00-2.00	1.75	1.50-2.00	2.00	1.00-2.50
Plant row crops, acre	1.25	1.00-2.00	1.25	.75-2.00	1.50	1.25-2.00
and fertilizer, acre	1.50	1.25-2.50	1.50	.75-3.00	1.75	1.25-2.25
DUSTING AND SPRAYING:						
Cattle, material furnished, animal	.15	.10- .25	.15	.15- .25	.15	.12- .15
Crops, no material furnished						
Spray, air, acre	1.50	1.00-1.50	1.25	1.25-1.65	...	....
Spray, ground, acre	1.00	.50-1.00	1.00	.50-1.00	...	.50- .75
Dust, air, acre	1.50	....	...	.50- .75	...	....
Dust, ground, acre	1.00	.50-1.00	1.00	.50-1.00	.75	.50- .75

IOWA DEALER SURVEY SHOWS

The Value of an Educational Program

What an educational program can mean to a fertilizer dealer's business was the purpose of a survey of 286 fertilizer dealers in Iowa by Iowa State College under contract with the Tennessee Valley Authority.

The 286 dealers retailed almost 40% of the approximately 430,000 tons of fertilizer sold in Iowa during the spring of 1953. Of this group, 154 dealers actually took part in a special educational, demonstrational sales program. These cooperating dealers sold about one-fourth of the fertilizer to almost one-fourth of the fertilizer users in the state.

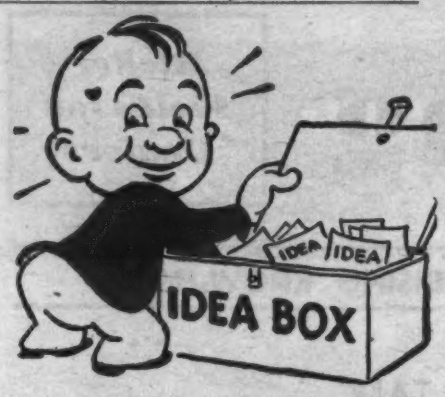
The accompanying article, which is adapted from the survey report by John R. Douglas, shows what usually happens to the business of a fertilizer dealer when he undertakes a positive educational program. The positive results suggest that other fertilizer dealers might wish to consider developing an educational program and providing more concentrated fertilizers and extra services for the farmers of their community, according to the report's foreword.

Excerpts from the survey report follow:

Fertilizer retailers and their distributors who work together to offer their farmer-customers "extra" services usually find that they sell more fertilizer than do other retailers and distributors. These services are in about the same class as the "kitchen maid" services that the supermarkets offer housewives.

However, some of these services are similar to but different from those offered the housewives. Just as a housewife can now buy well-trimmed meat that is minus much inedible suet and bone, so can farmers now buy fertilizers that are minus much of the "filler" that farmers formerly had to pay for. And just as the housewives benefit by being able to buy the most nutrition per

(Continued on page 16)



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6472—Organic Nitrogen

A sample and brochure describing an all organic nitrogen product manufactured by the Smith-Douglass Company, Inc., are available without charge. The product is called by the trade name, Nutronite, but was formerly called Smirow tankage. It is not a sewage or garbage sludge, according to the company's literature. The literature states that the product "is the 100% natural organic addition to mixed fertilizers. Its nitrogen is 90% water insoluble and 90% available—for that all-season effect on plant growth." The product can be bagged for lawn and garden fertilizers and is suitable also for golf courses. Dealer inquiries are invited. Mark No. 6472 on the coupon and mail it to Croplife.

No. 6474—Liquid Fertilizer Unit

Operational details of a "package liquid fertilizing mixing unit" built by the Standard Steel Manufacturing Co., Inc., are available without charge. The unit is claimed to be completely self contained and automatically meters and weighs all raw materials for batch mixing. It has a mixing capacity of 120 tons of liquid fertilizer every eight hours with one operator, company officials say. The mixing unit is skid mounted and is 18 ft. long, 8 ft. wide and 14 ft. high. The company announcement continues: "The unit will handle dry-form potash, aqua ammonia, liquid urea-ammonium-nitrate, phosphoric acid and other liquid fertilizer additives. It can use anhydrous ammonia for direct batch mix into complete liquid fertilizers without converting mechanisms. Accurately formulated liquid fertilizers can be automatically compounded quickly in exactly metered amounts." Secure more complete details by checking No. 6474 on the coupon and mailing it to Croplife.

No. 5542—Pallet Bag

The St. Regis Paper Co. has developed a "pallet bag" designed to give a "squared-off" package which permits better palletizing and improved appearance of the container. The company announcement states: "The length of the pasted bag is shortened for improved pallet loading and the size of the gussets is increased to obtain the same volume. A small sleeve and large valve prevent siftage even though the width of the gussets is increased. Light scoring along the edges adds to the square shape of the bag. After the bag is filled, it moves on a conveyor to a vibratory flattener which flattens the bag and contributes to easy palletizing." For more complete information check No. 5542 on the coupon and mail it to this publication.

No. 5531—Cleanser

Increased wetting properties and greater cleansing power are claimed for Pennsylvania Salt Manufacturing Company's product called General Manual Kleanser. Known as a farm and dairy cleanser, it has been reformulated to include nonionic and anionic wetting agents and additional polyphosphate content to make it more effective in hard water areas. The product is available in 5-, 10- and 25-lb. farm packages and 125- and 350-lb. bulk sizes. For more complete details check No. 5531 on the coupon and mail it to this publication.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 5537—Rodent Control

New developments are reported by the Solvit Chemical Co. in its rodent control unit called Kelly's nested "see-in" Rat Cafeteria. The unit is claimed to provide savings on freight charges and storage space since the nested design enables shipment of the completely assembled unit except for a feed hopper and cover. The parts are put together with clips, without tools, and can be disassembled quickly, the company's announcement states. The unit can be used for liquid or dry poisons or both, it is explained in free literature available to readers. To secure the literature check No. 5537 on the coupon and mail it to this publication.

No. 6459—Gardening Movies

Four sound, color, 16 mm gardening movies are available for showing without charge, announces Swift & Co. officials. The four are: "Dreams Come True," (parts one and two); "Food for Thought" and "How Does Your Garden Grow?" For further information check No. 6459 on the coupon, clip and mail it to Croplife.

No. 6457—Agricultural Chemicals

A new book designed to give a general description of the company's agricultural chemicals has been prepared by the Shell Chemical Corp. Included in the text is information concerning the uses for aldrin, dieldrin, endrin, D-D soil fumigant, Nemagon soil fumigant and allyl alcohol. In addition to general product information, a master insect control list for the insecticides and literature order blank are included. To order any of the company's literature, the order page may be torn off, the quantities desired filled in along with the proper address. Secure the book without charge by checking No. 6457 on the coupon and mailing it to Croplife.

No. 6460—Bag Design Trends

The part played by redesigned fertilizer bags in increasing sales is emphasized by the Percy Kent Bag Co. Information concerning trends and sources in bag design developments is available from the company. Company officials state that fertilizer brand identification and brand selling are important in convincing the farmer to choose a particular product. Display advertising on the product package offers a major opportunity to the fertilizer manufacturer, it is claimed. Products in new containers—with the design revamped to look cleaner, brighter, more modern and with the product benefit clearly pictured—enjoy an unmistakable sales boost, it is stated. Secure more complete details by checking No. 6460 on the coupon and mailing it to Croplife.

No. 6461—Blight Booklet

An illustrated booklet on the recognition and treatment of early and late blight in 18 different crops is being made available by the Chemagro Division, Chemical Insecticide Corp. Also desribed in the booklet is the company's new fungicide developed for blight treatment. Secure the booklet by checking No. 6461 on the coupon and mailing it to Croplife.

No. 6462—Insecticide

A new liquid insecticide, trade named Drinox, has been placed on the market by Panogen, Inc. The product contains aldrin and is claimed to be "effective in protecting newly planted seed and young seedlings from attack by wireworms, seed corn maggots and a variety of other soil-dwelling insects." It is recommended for treating wheat, oats, barley, rye, cotton, corn and sorghums. Seed germination is not harmed, it is claimed, and the product comes as a true solution (not a slurry), ready to use without mixing or diluting. For further information check No. 6462 on the coupon and mail it to this publication.

No. 6464—Hopper System

The K. E. Savage Co. has available a new bulletin which gives a description and specifications of its hopper system. According to the bulletin the system can be placed in any fertilizer plant having bays measuring at least 12 by 12 ft. square. The system's method of operation is described and a number of pictures depict various arrangements. In the pages devoted to specifications are sections titled: Elevators, conveyors, bin, scale, screen, swivel spout and signal panel. A number of photographs show conveyors in use. Secure the bulletin by checking No. 6464 on the coupon and mailing it to Croplife.

No. 6465—Rubber Tank Lining

A 40-page booklet describing the new Gates 50H rubber lining for chemical fertilizer storage tanks has been prepared by the Gates Rubber Co. The company asserts that the lining protects tanks against the corrosion of any chemical fertilizer s

(Continued on page 15)

Send me information on the items marked:

- ☐ No. 5531—Cleanser
- ☐ No. 5537—Rodent Control
- ☐ No. 5542—Pallet Bag
- ☐ No. 6457—Booklet
- ☐ No. 6459—Movies
- ☐ No. 6460—Bag Design
- ☐ No. 6461—Blight Booklet
- ☐ No. 6462—Insecticide
- ☐ No. 6463—Burn Treatment
- ☐ No. 6464—Hopper System
- ☐ No. 6465—Tank Lining
- ☐ No. 6466—Bagging Cost Kit
- ☐ No. 6468—Nitrogen Solutions
- ☐ No. 6469—Carrier Data
- ☐ No. 6470—Scale
- ☐ No. 6471—Valve
- ☐ No. 6472—Nitrogen
- ☐ No. 6474—Liquid Unit

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P. O. Box 67,

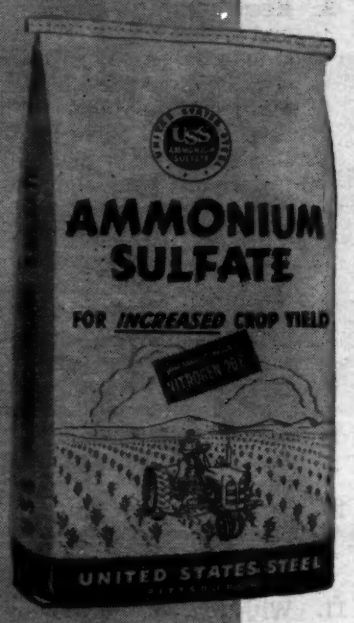
Reader Service Dept. Minneapolis 1, Minn.

It's time for fall applications of *USS Ammonium Sulfate*

Harvest's in and farmers are getting ready for the fall plow down. Now's your chance to show your customers these advantages of plowing down nitrogen-bearing USS Ammonium Sulfate this fall.

1. **They have *more time now* than they will have next spring.**
2. **Fall fertilizing means that crops get an *earlier spring start.***
3. **Fertilizing equipment *can move over the ground* with far less damage now than next spring.**
4. **USS Ammonium Sulfate nitrogen is the *non-leaching* ammonia form.**
5. **Nitrogen speeds the digestion or breakdown of crop residue and other organic matter.**

Fall application of non-leaching nitrogen is gaining wider support every year. This wide acceptance can be a good business-booster for you . . . if you act on it. Spread the word among your customers. Point out the advantages in getting their nitrogen into the ground THIS FALL. USS Ammonium Sulfate is available in bulk or bag . . . so place your fall order with your mixer now!



USS Ammonium Sulfate

USS

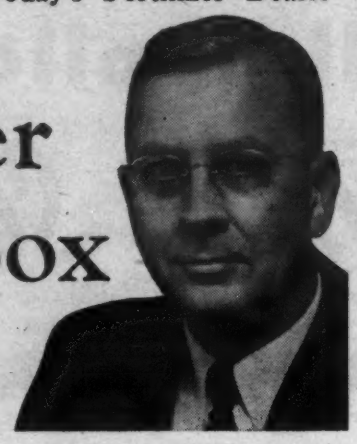
6-2471

UNITED STATES STEEL

The Bulletin Board

No. 21 in a series from the Spencer Chemical Magazine, "Today's Fertilizer Dealer"

The Spencer Question Box



Edited by

Proctor Gull

Chief Agronomist, **Spencer Chemical Co.**

"The Question Box" is one of the most popular features of TFD, Spencer Chemical Company's magazine for fertilizer dealers. Questions submitted by dealers are answered by Proctor Gull, head of Spencer's 7-man field agronomy team. Here are a few timely questions and answers from recent issues of TFD.

1. QUESTION: Cost and efficiency-wise, how would you rank anhydrous, nitrogen solutions and ammonium nitrate?—A. D. Grainger, Market Bureau, Manning, S.C.

ANSWER: Spencer makes all three of these nitrogen carriers. We believe that ammonium nitrate, considering everything, is the best nitrogen buy for most farmers.

Ammonium nitrate is a versatile material. It can be stored in any good, sound waterproof building on the farm. The dealer can warehouse it the same way. It is dried to almost complete dryness and (in the case of "Mr. N" at least) is packed in a polyethylene - lined, moisture - proof bag. For this reason, it will remain in drillable condition indefinitely.

This means that the farmer can apply ammonium nitrate when his soil and his crop are ready and the labor supply available to do the job. The timing of an operation such as the application of nitrogen may be a critical thing to the farmer. It can well spell the difference between optimum acre returns and a less profitable operation.

Another point in favor of ammonium nitrate is that it is a solid and is guaranteed to be 33½ percent nitrogen. Because of this, the farmer knows how much he is applying because he can see it, feel it and even weigh it. He can also tell whether or not he is getting even distribution.

Because anhydrous ammonia is a gas, it must be sealed in the ground 6 to 8 inches deep, and the soil moisture must be just right. Otherwise, considerable loss of nitrogen may be experienced. This loss can range all the way from a negligible amount up to as much as 50 to 60 percent, depending on texture of the soil, depth of application, moisture content of the soil and rate of application of ammonia.

It was estimated in a recent publication that as much as 35% of anhydrous is lost from the soil in a Florida sand where 90 pounds of nitrogen is applied with the applicators spaced 40 inches apart.

Nitrogen solutions must be sprayed on and metered out through nozzles or other means of metering. These solutions have a tendency to salt out when temperatures get low, and this interferes with the uniformity of nitrogen distribution.

Most nitrogen solutions are corrosive, and therefore they must have specialized equipment for storage and handling. Usually this equipment is expensive. Anhydrous ammonia also requires specialized equipment—high-pressure equipment which is somewhat hazardous.

Thus, solutions and anhydrous are usually custom applied, and this means that the farmer loses control of his operation. He must wait his turn for the custom applicator.

It is for these reasons that we recommend ammonium nitrate as a source of supplemental nitrogen.

2. QUESTION: Is there any argument or good selling point to convince a farmer that fertilizer applied in the Fall will still be in the ground in Spring?—Donald Ackley, Pigeon Falls, Wisc.

ANSWER: There are many facts to support the argument that fertilizer applied in the Fall will still be available and ready to work in the Spring —providing certain precautions are followed.

Nitrogen fertilizers should never be applied on sandy soils in the Fall unless a heavy covering of carbonaceous organic matter is being plowed down, such as straw, corn stalks or grassy meadows (or unless there is a growing crop on the land). In your area, soils of silt loam or heavier texture can be fertilized in the Fall with good assurance that it will be carried over.

A bluegrass yield was increased 1,947 pounds with 600 pounds of 10-10-10 Fall applied, as compared to a 1,624-pound increase for the same amount of fertilizer Spring applied. (This was in a test conducted by Professor C. J. Chapman of the University of Wisconsin.) The results would indicate that Fall is the best time to fertilize bluegrass pastures and grass meadows.

To Fertilizer Dealers ONLY

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Gentlemen: I am a fertilizer dealer not presently receiving **Today's Fertilizer Dealer magazine.** Please send me a free subscription without obligation.

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Post Office.....State.....

SPENCER®
Spencer Supplies the Nitrogen

RINGING THE cash register

Merchandising Hints for The Retailer

A leading trade publication cites important checkpoints for management to consider as standard operating procedure. While more checkpoints could be added, the publication states, the following are among those that should not be overlooked:

Points to Check

1. Devote enough time to planning, not only in terms of future store growth, but planning for each day, and for the following days and weeks.
2. Develop a fixed organizational policy that serves as a financial, merchandising and operational guide.
3. Keep accurate, complete, up-to-date costs, sales and profits figures, comparing them with industry standards. Analyze them to pinpoint areas of strength and weakness.
4. Make certain your equipment is modern, efficient and low-cost. Have it reflect latest trends.
5. Use foresight in maintenance and repairs. Don't tarry until your equipment and fixtures are run down and require heavy expenditures.
6. Be readily available for consultation and actively supervise your personnel.
7. Keep your employees' morale high and see to it that they are well-trained, courteous, neat, efficient, punctual and interested in their work. Evaluate their work periodically.
8. Know what the competition is doing by comparative shopping and studying ads.
9. Survey your community and surrounding areas for new sites and keep informed of trading changes.
10. Study trade publications, to keep abreast of new developments and techniques, attend meetings and conventions and participate in trade association activities.
11. With regard to community relations, be active in civic, social or religious organizations.
12. Tie-in with other merchants to sponsor special sales days, chamber of commerce weeks, dollar days and special holiday events.
13. Make maximum use of point-of-sale, front-of-store and window promotional devices and follow through with mailings and circulars to supplement ads.
14. Cash in on visual aids such as lighted signs, murals and posters for special promotions.
15. Gear your operation to function smoothly in purchasing, receiving, stocking and storeroom-to-sales floor movement.
16. Practice FIFO (first in, first out) in stock rotation and exercise quality control of merchandise.
17. Make your office routine a smooth, well-oiled machine.
18. Be alert to fire and accident hazards; train your staff to meet emergencies.

Crucial Five Years

Surveys of business failures show that most failures occur in the first five years after a store has been started, and poor management leads the list as the chief cause of failure in all types of business.

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CHOOSE FROM THE Complete Broyhill® LINE

the name that means CUSTOM QUALITY

Whether you're a commercial applicator, manufacturer, or individual user, there's a quality Broyhill tank and sprayer in a size, mount, and design to fill your needs. *Either knives or discs available.*

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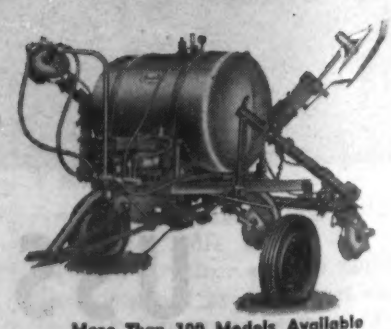

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THE BROYHILL COMPANY, DAKOTA CITY, NEBRASKA

FARM SERVICE DATA
Extension Station Reports

Top-dressing alfalfa fields with fer-
izer every year can pay off in extra
ns of hay per acre per year, accord-
g to A. R. Albert and A. M. Strom-
en, University of Wisconsin soils
ecialists. They report that hay
elds have averaged more than four
ns per year for the past six years
fields top-dressed annually with
0 lb. of fertilizer. Unfertilized fields
ve yielded less than three tons of
y.

The tests were made at the Spooner
anch agricultural experiment sta-
on. The extra hay from the fertilized
elds the first year was sufficient to
y for the plant food the second
ar. These results have continued for
ch of the succeeding years. The
ronomists say enough nutrients re-
ain in the soil for an extra two or
ree tons of hay with no added in-
stment.

★

Agronomists at Purdue University
ve reported that many Indiana corn
owers can lower costs per bushel
d increase returns per acre by ad-
sting planting rates to soil fertility
vels. They say that there will be
tle additional expense for the extra
ed needed.

A laboratory soil test that meas-
es soil acidity as well as available
osphate and potash is the best indi-
tor of the fertility level of the soil.
owever, most farmers have a fairly
od idea of the capability of their
elds from past experiences, the
gronomists say. And, the increased
eld capacity brought about by
eavier fertilization is a further
easure of the potential yield.

According to many observations
d much research, there appears to
e little benefit from planting corn in
ws closer than 40 inches. On this
asis, the agronomists have recom-
ended spacing of drilled corn for
arious yield levels.

The Purdue agronomists say that on land capable of producing 75 bu. per acre, kernels should be drilled about every 13 inches. In 135 trials over Indiana, corn planted at this rate on 75 bu. land produced—on a seven year average—13 bu. more per acre than with 20 inch spacing.

At the 50 bu. level, 20 inch spacing
f kernels is a full planting rate.
and built up to a 100 bu. yield po-
ential should produce most when
ernels are spaced at 10 inch inter-
als, and for land capable of produc-
ng 125 bu., 7 to 8 inches.

In 20 trials where early hybrids
veraged 84.5 bu. per acre and full
eason hybrids 85.5 bu., planting at 10
nch intervals produced five bushels
nore per acre than at 13 inches. Even
dry years there was no decrease
r the closer planting.

These full rates of planting seem to
crease yields in good years without
utting yield in dry years. The above
anting rates are for well drained
oils that are not drouthy.

★

Research at Itasca State Park by
he University of Minnesota School of
orestry shows that herbicides such
s 2,4-D can aid establishment of
hite pine seedlings by greatly re-
ucing heavy brush.

Henry L. Hansen, associate profes-
or of forestry at the university,
lected an area that had dense hazel
rush and where old-growth white
nd red pine assured plenty of seed.
Under natural conditions, although germination and initial seedling survival were possible, the young trees couldn't live more than a few years.

Mr. Hansen sprayed part of the heavy brush area with 2,4-D and left another part unsprayed. After eight years, the number of white pine seedlings six inches or higher had increased from 375 to 4,875 per acre on the sprayed area. On the untreated area, the increase was from 290 to only 1,430 per acre.

This meant a 13-fold increase on 2,4-D treated areas and only a five-fold increase on untreated sections.

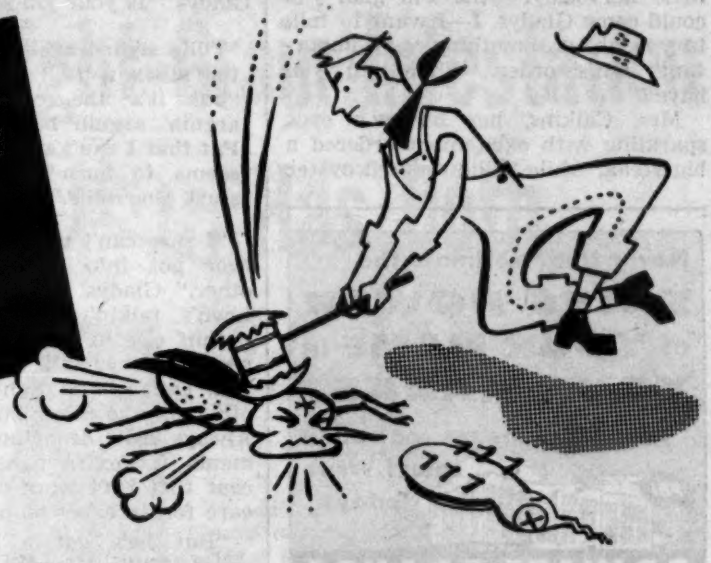
Soil Insecticides

AMES, IOWA—More than a million acres of Iowa corn land were treated with soil insecticides during 1956, Earle Raun and J. H. Lilly, Iowa State College entomologists, have reported. Increased use of insecticide-fertilizer mixtures helped boost this total. The mixtures were used on more than half of the treated acres.

CROPLAND CHANGES

BROOKINGS, S.D. — Major overall changes in cropland use is South Dakota have been brought out by Arthur W. Anderson, extension farm and home development specialist at South Dakota State College. In looking over the July crop report for the state Mr. Anderson said that more acres are being devoted to alfalfa and tame hay than ever before. Less acres are in small grain—particularly wheat and barley. Corn is still king of all the crops, claiming a little over one-fourth of all cropland in South Dakota this year. Soybean acreage is about the same or down just a little from 1955. In 1950 there were only 72,000 acres of soybeans compared with 249,000 acres last year.

There are many ways to kill insects but...



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Alfalfa Snout Beetle	White Grubs
Spittlebug	Cutworms
Grasshoppers	Wireworms
Sweet Clover Weevil	Seed Corn Maggot
Cutworms	White Fringed Beetles (Larvae)
Armyworms	Japanese Beetle (Larvae)
Lygus Bugs	Flea Beetles (Larvae)
Harvester Ants	False Wireworms
Egyptian Alfalfa Weevil	Root Weevil
Black Vine Weevil	European Chafer
Plant Bugs	Ants
Leafhoppers	Asiatic Garden Beetle (Larvae)
Clover Root Borer	Root Maggots
Cotton insects	Onion Maggot
Cotton Boll Weevil	Strawberry Root Weevils
Cotton Fleahopper	Strawberry Root Worms
Cotton Thrips	Sugar Beet Root Maggot
Rapid Plant Bugs	Western Harvester Ant
Tarnished Plant Bugs	Eye Gnats
Armyworms	
Cutworms	
Garden Webworms	

...and many others

● Farmers prefer Heptachlor because it controls a wider variety of insects—soil insects, forage insects, cotton insects, and many others. They prefer Heptachlor because it's safe...a residue tolerance for Heptachlor has been established on many crops.

To you, this wide range use and acceptance of Heptachlor formulations means faster turnover of stock and less money in inventories.

A faster growing demand for Heptachlor insecticides is also being built by advertising in your agricultural markets.

Heptachlor is available in many convenient forms and concentrations—wettable powders, emulsifiable concentrates, and granules. For complete information on Heptachlor, and recommendations for its use write to:

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Doing Business With

Oscar & Pat

By AL P. NELSON
Croplife Special Writer

Soft, piped dinner music was playing, and the lights also were soft, as Tillie Mason, and her friend Mrs. Fred Calkins sat at a table at the fashionable Fox & Hounds Inn.

"Oh, Tillie," gushed Mrs. Calkins, "this is so thrilling, and so much fun. It was so nice of you to ask me."

Tillie, the plumpish bookkeeper for Schoenfeld & McGillicuddy, smiled a little nervously. "And I'm glad you could come Gladys. I—I want to talk to you about something very important. Let's order. What will you have?"

Mrs. Calkins, her brown eyes sparkling with excitement ordered a big steak, while Tillie ordered oyster soup and scrambled eggs and toast.

"Oh," said Gladys Calkins after the polite waiter had gone toward the kitchen, "did I order too much? You—you aren't ordering hardly anything!"

Tillie sighed. "No, you didn't order too much. I wish I could eat steak, but I just can't anymore. My ulcer—I have to stick to soft foods and milk, milk, milk."

"You poor kid," sympathized Gladys. "Is your job so tough?"

Tillie sighed again. "I don't have too much work," she said slowly, "but it's the constant arguin', arguin', arguin' between Oscar and Pat that I can't stand. My stomach seems to burn every time they start quarrelin'."

"I sure can't understand how they ever got into business with each other," Gladys laughed. "The whole town's talkin' about it. If there's nothin' else to chin about at a party, people always talk about Oscar and Pat. Oscar is so tight. I heard the other day he never buys a new suit. Always visits department store basements for extra pants to match a coat that isn't worn out. He doesn't care for an exact match, not him."

"But he's got a lot of money saved," Tillie defended in spite of herself. "I like Pat better, but you can't forget that Oscar will always be able to take care of himself when he's old."

"Oh, him," Gladys said, with a wave of her hand. "How about you? You look awfully worried."

Tillie's eyes misted a little. "What—what would you think, Gladys, if I—if I just got up some day and went to the Big City?"

"Oh, gosh," Gladys said slowly, "is the job as bad as that?"

Tillie nodded. "I don't see how I can stand it much longer. Even in my dreams I see Oscar and Pat quarrelin', quarrelin' all the time."

"Well," Gladys said determinedly. "I admire your courage. I have always thought that every girl ought to take a fling at New York before she ties herself down to a man for the rest of her life."

"Oh, I wouldn't think of going to New York," Tillie said apprehensively. "I'd be scared. Des Moines would be far enough for me."

Gladys raised her eyebrows. "Well, Des Moines would be an improvement on this town, or would it?"

Tillie blushed. Slowly she spooned her oyster soup, carefully avoiding the meat. Then, "Oh, Gladys," she said, "you know the real reason I'm going is because of—of Dave. And Oscar and Pat fighting don't help much either."

"Oh that Dave!" Gladys said angrily, "I don't see how he can go with a girl for six years and be so bashful he won't ask her to marry him. If he was my beau I'd have ditched him long ago. Too many other tomatoes on the vine, if you ask me."

Tillie looked hurt. "B—but I love him, Gladys."

"Yeah, I love my Fred, too," Gladys said indignantly, "but I have to tell him what is what once in a while. Marriage is not all love and romance, my dear. Do you think he'd ever ask me out to a dinner like this now, after we're married three years? Oh, no. He'll just sit in the parlor reading the paper and yell, 'Isn't dinner ready soon, honey pie?' But I love the big lunkhead, Tillie. Regardless of what you may think before marriage, there are no perfect men. They are just grownup kids, or they think they are grownup. Most of them are spoiled, and we spoil them, darn us. Makes me mad sometimes. But that's human nature."

Tillie looked shocked at such revelations. "Oh, Dave and I wouldn't be like that. He—he seems so considerate."

"Yes, he's so considerate, he can't even ask the Big Question. Tillie, you've come to the point where you have to just push him into it."

"How—how do I do that?"

"I don't know," Gladys confessed, frowning, as she cut the last piece of her steak. "I don't know." Then suddenly, she looked up, bright eyed. "I've got it," she exclaimed. "You—you have to start flirtin' with all those supply salesmen who come to Oscar and Pat's."

"Why, why?" she asked, evidently much puzzled.

"To give you practice, that's why," Gladys went on. "If you start being pleasant, extra nice to the salesmen and even flirt with one a little now and then, it will get to be a habit with you. Then when you go out with bashful Dave Shepard, you will unconsciously be pleasant, and nice to him and flirt a little. That should get him—it does many men."

"I wonder if I can do it," Tillie mused. "I wonder."

"Sure you can," Gladys encouraged. "Most men like a little flattery, some like a lot. Turn on the charm honey."

Tillie looked thoughtful. "Maybe I should," she said slowly. "Maybe I have been just like Oscar—too, too bound up, too afraid to see and use new ideas."

"You can always give yourself an A for trying," Gladys smiled, "and you may like it."

Tillie seemed vastly relieved. "I'm so glad I invited you, Gladys. You've helped me so much. If your idea works, maybe Dave will ask—" she blushed.

"I think you'll find a way to make him ask," Gladys said. "Women are much, much smarter than men in things like that, the lunkheads."

"And I won't quit Oscar and Pat and go to Des Moines," Tillie said determinedly. "I'll just try and stick out those daily quarrels for three months at least. After that, maybe Dave will have plans for us both—" she blushed again. "Let's go home, Gladys," she said. "I don't want to think too far about that."

Use Early Bird Theme In Pushing Fall Fertilization

Since farmers pride themselves in being "early birds," why not point out to them the advantages of being "early bird" fertilizer buyers?

An early bird theme could be used in advertising and promotion to bring out the many profitable factors of early buying.

Tell the farmer he can be an early bird by buying and applying fertilizer in the fall, by doing some plowing and seeding and getting the jump on Mother Nature.

Here are some early bird appeals you can use:

1. Why let some of your land lie idle over winter? Get the jump on nature, get the jump on your heavy, bunched-up spring farming schedule by fertilizing in autumn, plowing the land for some grain crops and sowing them. By so doing you are also getting the jump on other farmers. (Don't overlook this perfectly natural human reaction—the desire to fare better than the average.)

2. Be an early bird. Have that fertilizer in the ground so that there will be thorough absorption the moment the soil becomes wet and pliable in spring. Fall sowed crops grow faster when properly fertilized. You can have half of your spring farm work done by a well planned fall fertilization, plowing and seeding program.

3. The economics of time. Ask the farmer how many hours he wastes each spring looking for the right kind of fertilizer for his crops. Ask him how much time he spends going from dealer to dealer, how much time he spends telephoning, ask him how much time he spends waiting for fertilizer to be delivered and spread, how far behind he gets in his spring sowing program, how much time he spends waiting for the soil to dry so that fertilizer trucks can get on the land.

4. Early bird literature. Every fertilizer dealer can very easily gather a list of statements made in newspapers, magazines and bulletins concerning the advisability of applying fertilizer in the fall to lessen the spring work load. Many of these statements are by authorities. Quote some of them in your ads. Print a list of articles (excerpts) quoting them and headline it "They Too Say it Pays to be an Early Bird in Buying Fertilizer."

Never Underestimate the
SALES POWER
of YOUR NAME in
YOUR MARKET
Your label means controlled sales! Write today...
PBI
PRIVATE BRANDS
309 So. 3rd • Dept. CL • Kansas City, Kansas

at VULCAN ®

All styles of steel pails
and drums —Sizes 1-1½-2-2½-3
3½-4-5-6-6½-10-12 gallons

Available with all types
Nozzles and Pouring Spouts

Vulcan makes the finest open head steel pails and closed head drums in the above sizes... Every pail thoroughly tested... All meet rigid I.C.C. specifications.

Hi-Bake Linings Assure Protection
Vulcan chemists will work with you to develop a Hi-Bake protective interior lining to meet your specifications and packaging problems... Your assurance of "positive product protection." Complete facilities available to design and lithograph your Brand Name on any size or style container.

If we don't have what you want—we'll design it!
Call or write today for samples and more information.

OVER 40 YEARS CONTAINER EXPERIENCE
VULCAN CONTAINERS INC.
Bellwood, Illinois (Chicago Suburb) Phone: Linden 4-5000
In Toronto, Canada—Vulcan Containers Limited.
Representatives in all Principal Cities

WHAT'S NEW

(Continued from page 10)

tion now on the market or presently planned. Corrosion tables, proper tank selection, diagrams, specifications and specific uses are contained in the booklet which may be had if you check No. 6465 on the coupon and mail it to Croplife.

No. 6463—Treatment For Burns

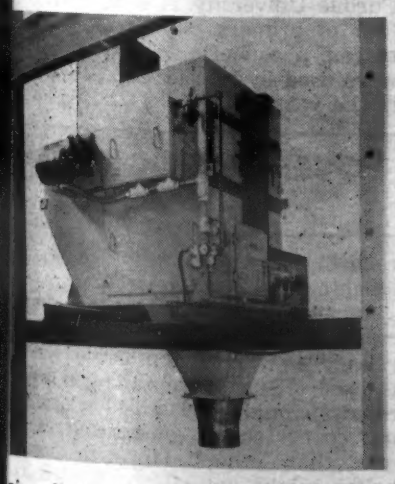
A product called by the trade name, G-63 burn relief spray, is being produced by the General Scientific Equipment Co. It comes in a push-button spray bomb and the product is claimed to treat burns and protect the skin with a cooling emollient film. Secure more complete details by checking No. 6463 on the coupon and mailing it to this publication.

No. 6466—Bagging Cost Kit

A new "do-it-yourself" packaging work kit, designed to help fertilizer manufacturers figure bagging costs, is available at no charge from Union Bag-Camp Paper Corp. The kit contains tables for determining the labor costs per ton of material and per thousand bags at varying production rates. Also enclosed is a chart which figures the cost of multiwall bag closing materials (cotton thread, rayon thread and filter cord) as well as a bag cost comparison sheet. Secure the kit by checking No. 6466 on the coupon and mailing it to Croplife.

No. 6470—Fertilizer Scale

A new automatic fertilizer scale which is claimed to weigh and bag up to twenty 80-lb. bags of fertilizer a minute is announced by the Richardson Scale Co. Pilot tests have produced accuracies within 4 oz., the announcement states. Called the HA-39 fertilizer bagger, the unit incorporates such features as a power driven belt feeder within the scale,



air cylinder discharge of hopper, totally enclosed construction and stainless steel construction of all contact parts and parts exposed to fertilizer dust. Secure more complete details by checking No. 6470 on the coupon and mailing it to Croplife.

No. 6468—Nitrogen Solutions

A new, 48-page nitrogen solutions handbook for the fertilizer and chemical industries has been published by Nitrogen Division, Allied Chemical & Dye Corp. According to the company's announcement, the book contains up-to-date nitrogen solutions technical data and describes the chemical and physical properties of solutions and how to store, handle and use them in fertilizer manufacturing. The book also presents new information on granulation and formulation of fertilizers. Numerous formulas and conversion factors also are included. The handbook is illustrated with scenes of typical fertilizer manufacturing and solutions handling arrangements. Copies may be obtained free of charge by checking No. 6468 on the coupon and mailing it to Croplife.

No. 6469—Carrier Data

Officials of Minerals & Chemicals Corporation of America state that detailed information on Attaclay and Granular Attaclay—carriers and diluents for pesticide dusts, wettable powders and new granular formulations—is now available in Spanish and Portuguese languages. The material is so arranged as to be of maximum value to persons interested in the development of pesticides, fungicides, herbicides and other agricultural chemical dusts and powders. Free copies are available by checking No. 6469 on the coupon and mailing it to Croplife.

No. 6471—Tank Control Valve

Two new combinations of tank control valves for use with air pressure-operated nitrogen solution tanks have been announced by the Circle Seal Productions Co., Inc. The model P4-671 applicator tank control valve combines: A pressure regulator, to control the amount of pressure in the tank, thereby regulating the rate of application and to serve as a relief valve; an automatic vacuum relief to protect the tank against negative pressures; a manually operated bleed valve, and a check valve to protect the air compressor from corrosive ammonia vapors. A similar unit, model P4-670, incorporates the features of model P4-671 except for the pressure regulator which is replaced by a present pressure relief valve. Secure more complete details by checking No. 6471 on the coupon and mailing it to Croplife.

FAMILY FAIR

CLEVELAND — The Family Fair, to be held here Oct. 21-28, will have a family work and play section in which firms in the farm equipment and supply industry can display their products.

It Takes TWO to Fight Grain Infestation and Douglas Has Both

1. Douglas HAS THE KNOW-HOW

Grain sanitation problems? Solving them is part of the stock and trade of Douglas. Whether you need experience and know-how for your own problems of grain sanitation or for those of your farmer customers, you can rely on Douglas to help you with those problems. More than 40 years of experience has made Douglas the most responsible and qualified source for the solution of your grain sanitation problems.

WHEREVER THERE IS A GRAIN SANITATION PROBLEM THERE IS A NEED **FOR DOUGLAS!**

Douglas CHEMICAL COMPANY
620 E. 16TH AVE. NO. KANSAS CITY 16, MO.
WAREHOUSES MAINTAINED AT KANSAS CITY, MO. AUGUSTA, GA. PIQUA, OHIO DENVER, COLO.

2. Douglas HAS THE PRODUCTS

In addition to broad experience in the field of grain sanitation, Douglas offers you a complete line of proven grain sanitation products. Whether you are in the grain storage business or resell our products to others who are, you can always depend on these Douglas products!

DOUGLAS TETRAKOTE ®

. . . the liquid grain protectant that stops insect infestation before it starts.

DOUGLAS TETRAFUME ®

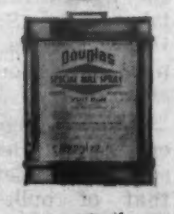
. . . the grain fumigant that gives you 4-way protection and grain conditioning.

DOUGLAS TETRAKIL ®

. . . for effective on-the-farm grain fumigation and for commercial flat storage.

DOUGLAS SPECIAL MILL SPRAY

. . . the surface and space spray that protects the surface of stored grain from insect attack.



DOUGLAS FARM BIN SPRAY

. . . the active residual spray for you and your customers to use to rid empty bins of insect infestation.

FREE Brochure

Send for copy of new brochure that tells complete story of Douglas TETRAKOTE and how it is effectively combating the problem of grain sanitation. Mail coupon today.

DOUGLAS CHEMICAL CO.
620 East 16th Avenue, North Kansas City, Missouri

- ☐ Send literature on following Douglas products:
- ☐ Send free copy of TETRAKOTE Brochure.
- ☐ Send movie reservation information.
- ☐ Have a Douglas representative call on me.

NAME_____

COMPANY_____

ADDRESS_____

TOWN_____ STATE_____

DEALER SERVICE

(Continued from page 9)

man-hour of earnings in history, so do farmers benefit by being able to buy lower cost plant-growing nutrients.

Fertilizer Sales Rise

All this was borne out in a survey of 286 fertilizer dealers in Iowa. These dealers handled nearly 40% of the approximately 430,000 tons of fertilizers sold in Iowa during the spring season of 1953. Of this group, 154 dealers actually took part in a special educational program that was aimed at teaching farmers how to use fertilizers more effectively, how to save money by buying the more concentrated fertilizers; and how to use fertilizers on crops not generally fertilized before. Both gross sales of fertilizers and percentage of income for these 154 dealers were usually larger than they were for the 132 dealers who did not take part in that educational program.

These 154 dealers who took part in the special educational program sold on an average almost twice as many tons of straight fertilizer materials as did the other dealers. They sold over one-third more tons of mixed fertilizers than other dealers in the survey.

These dealers who took part in the special educational program sold more high analysis grades than other dealers. More grades sold by participating dealers contained 40 or more units—40% or more—of plant nutrients. On the other hand, fewer grades sold by dealers taking part in the program contained less than 30 units of plant nutrients. Eighty seven percent of the dealers who took part in the program had a "best seller" in mixed fertilizers that contained 30 or more units of plant nutrients. Only 60% of the non-participating dealers had a "best seller" mixed fertilizer that was that concentrated.

Dealers who took part in the educational program sold more straight materials than did the non-participating dealers.

Dealer Services Help

The Iowa fertilizer dealers who had the greatest sales volume helped their farmer-customers in many ways. One form of help was in testing soils for farmers to determine their plant nutrient requirements. Some dealers sent soil samples to the agricultural college soil testing laboratory. Some merely explained the procedure to farmers and supplied bags for mailing in the soil samp'es.

Another form of help to the farmers was dealer rental of fertilizer spreaders. Yet another service was that of bulk spreading fertilizer. This was done by the local fertilizer dealer or a custom operator who spreads bulk—or unbagged—fertilizer by the truck load over a large field in a short time.

As a rule, the per unit cost of plant nutrients to farmers for fertilizer that is bulk spread on the land is less than the cost of the same materials in bags at the dealer's warehouse. Another dealer service was delivery of bagged fertilizer to the farm.

Another dealer service popular with fertilizer customers was that of supplying them with state agricultural college publications. Fertilizer dealers who did this consistently sold more fertilizer than those who didn't.

Most fertilizer dealers in the study furnished some printed information to farmers who bought fertilizer from them. Some of this literature was in the form of pamphlets sent out by the wholesale fertilizer distributors. Dealers who distributed the most fertilizer also distributed the most college bulletins.

Cooperation between the state agricultural college and the more successful fertilizer dealers in the state extended beyond the use of publications on the use of fertilizer.

The retail dealers, with the help of county extension directors, held meetings for dealers and key farmers who were especially interested in learning how to use fertilizer more effectively. Wholesale fertilizer dealers invited extension personnel to tell retailers and specially selected farmers about more efficient fertilizer use. Some dealers sponsored field plot demonstrations which were established and supervised by the local county agent.

Aids for Dealers

What does this mean? It means that the educational sales program probably helps fertilizer dealers to become more aware of the extra services that farmers need and like. To repeat, here are a few of them: helping with soil tests for lime and fertilizer; furnishing college publications about fertilizer and its use; holding fertilizer meetings at which dealers and key farmers in different communities attended; enabling farmers to rent special equipment for spreading one-element, high analysis fertilizers; furnishing drivers and dealer-owned trucks to custom spread the farmers' fertilizer—straight or mixed; using extension service recommendations in educational-type advertisements on radio and in newspapers, magazines, and pamphlets.

Dealers, distributors and manufacturers of fertilizers found that extra services helped sell their products. And they handled products which were higher in plant nutrients than the average.

In addition, dealers who were active in the educational sales program promoted improved fertilization practices. These improved fertilization practices were for crops not ordinarily fertilized, or for fall-season fertilization of crops, or for achieving special results from new fertilizers of higher analysis than farmers were using.

Convincing a farmer that he ought to apply more plant nutrients than he has been using—while backing up the sales talk with bona fide state college information — will usually stimulate fertilizer sales and result in more efficient crop production.

New Customers

This report on the survey bears out what has been sensed for some time by progressive people in the fertilizer industry: Educate a farmer on how to use a concentrated, up-to-date fertilizer. Sell him such a fertilizer—one that contains more plant nutrients per bag and per dollar invested. Provide him with extra physical services, such as soil testing and bulk spreading.

Farmers will patronize dealers who provide all of this for them and build their businesses into large volume sales—just as housewives patronize the supermarkets and make them large-volume merchandisers of high-quality, low-cost foods.

The fact that those dealers who took part in the educational sales program sold the most fertilizer does not mean that a dealer has to take part in that program in order to be a successful, large-volume fertilizer dealer. But it does suggest that other dealers might want to consider developing an educational program; thus they would provide extra services and dollar-wise buys in fertilizer and allied services in an effort to achieve similar results in their community. At the same time the dealer is doing this, he will be contributing toward low-cost farm crop production in that farming community.

Economist Points Out Fertilizer Use Returns

COLUMBIA, MO.—A Missouri farm economist says that fertilizer use could increase six to 10 times above present levels if farmers used plant food the same as businessmen use other factors of production to increase their net profit.

Gordon B. Nance, extension economist of the University of Missouri, points out that other businesses use money or credit to increase their earnings, particularly where the investment will return more than it costs.

Citing the extent to which fertilizer use can increase a farmer's net earnings, Mr. Nance says that Missouri tests indicate that the first $6 worth of fertilizer per acre returned 291% on below-average land planted to corn. The corn was priced at $1.20 bu. The second $6 gave 277%. They had to use $40 worth of fertilizer per acre before the return from the last application declined to 5%.

FALL-APPLIED FERTILIZER DOES WELL—Fall application of nitrogen gave results every bit as satisfactory as those from spring application on brome grass in Kansas tests. Note thick growth on the field at left, which was top-dressed Oct. 10, 1955. Field in the center was top-dressed in February, 1956, and the field at right, on April 25. These pictures, taken on May 11, 1956, show Arlie Woldtemuth, Spencer Chemical Co., agronomist. Photos from Middle West Soil Improvement Committee publication, "News Letter."

Iowa Firm Reduces Credit Problems

The Bell Plant Food Service, Inc. Fort Dodge, Iowa, lessens its collection problems with a policy which calls for a down payment on fertilizer of $25 with the balance payable on delivery.

Don Bell, who heads the firm, says that the method works well. In fact most of the sales are on a cash basis.

The firm, located in an excellent corn producing region, does some direct selling in and near Fort Dodge and has dealers in other parts of Iowa. The firm has one bulk delivery and spreading truck, but reports that more bagged than bulk fertilizer is sold near Fort Dodge.

Sales to individual farmers in the region range from $300 to $2,900, which give an indication of the growing use of fertilizer on individual farms.

Mr. Bell and his staff urge farmers to have their soil tested so that the right analysis fertilizer can be prescribed. Most farmers get their soil tested through the state college at Ames.

This company participates in farmer educational meetings in the area. Many of these are held by agricultural college leaders, and farmers turn out in large numbers for them. This is another indication of the interest which farmers have in fertilizer and their eagerness to learn more about its proper application for greater crop returns.

The Bell Plant Food Service, Inc. advertising includes newspaper and direct mail. During the last year Mr. Bell has also used some radio announcements on Mason City and Fort Dodge area stations.

More Plant Food

LAFAYETTE, IND.—Indiana farmers used more tons of plant food in 1955 than farmers in any other state. While more fertilizer was sold in a number of other states, Indiana farmers used more tons of plant food because they bought fertilizer of a higher analysis, according to A. S. Carter of the state chemist's office at Purdue University. A total of 411,664 tons of primary plant nutrients—nitrogen, phosphoric acid and potash—were used by Hoosier farm operators in the year ended June 30, 1955.

OVER THE COUNTER

(Continued from page 9)

regardless of the use made of machine and similar items.

"Operating costs include fuel, lubricants, labor and such repairs as are related to the amount the machine is used. Thus, it appears that some repairs would be classified as operating costs (chains, sprockets, gears) and that others (tires, batteries, belts) might actually be fixed costs as they deteriorate whether used or not. The amount of annual use is an important factor in determining the relative size of these two items, 'fixed' and 'operating costs'."

Timing Important

The timing which custom operators can offer to their patrons is an important factor in the success of such services, it is indicated in the Oklahoma study. Custom services have the advantage of freeing farmers for other work, which can be a money-saving asset during the harvest and other rush periods.

Furthermore, farmers with limited capital may find that hiring custom operators for some jobs permit them to use their funds in better paying alternatives.

Warren A. Ranney

G.L.F. APPOINTMENT — Cooperative G.L.F. Exchange, Inc. has named Warren A. Ranney director of industry relations. He will advise management of the farmer purchasing cooperative on government and industry actions affecting G.L.F., keeping in close touch with intentions and decisions of the U.S. Department of Agriculture and other government agencies, and national organizations in agriculture and industry. His industry contacts will include suppliers of G.L.F. commodities, and ingredients for G.L.F. feeds, fertilizers and farm chemicals. A graduate of Cornell University, he was moved up from supervisor of education and training.

Federal Officials Join Sleeping Sickness Fight in Massachusetts

BOSTON—Federal health officials have joined the drive to halt the spread of sleeping sickness in Massachusetts. Dr. Richard O. Hayes, government entomologist, and Dr. Walter A. Murray, Jr., a doctor of medicine, both attached to the U.S. Public Health Department's Communicable Disease Center in Georgia, are at work here at the request of state health officials.

A public health spokesman in Washington said the disease, known as equine encephalitis and carried by mosquitoes, has spread from the Carolinas to New England. He described the outbreak as the worst since 1933.

Four persons and 23 horses have died from the disease in Massachusetts and 10 cases are suspect as of Sept. 4.

Testing of mosquitoes collected in special trips in areas where sleeping sickness cases have occurred is in progress at the State Health Department's diagnostic laboratory at Harvard Medical School.

Dr. C. C. Dauer, in charge of communicable disease reporting for the U.S. Public Health Service, said large scale spraying is being done in cities, towns and rural marshes.

Two Merrimac Valley communities in Massachusetts, Lawrence and Haverhill, held special sessions to discuss preventive measures to combat the wave of sleeping sickness. The Lawrence City Council convened Aug. 30. Public parks and playgrounds in Lawrence and swimming areas have been sprayed with a chemical solution by the city park department. A special emergency meeting of the Haverhill City Council, to authorize appropriations for spraying, was called early in September.

Suffolk Downs race track, scheduled to open its fall meet Sept. 24, sprayed its entire plant by airplane and also adjacent marshlands, drainage ditches and dumps and every stall in all stable areas.

Topsfield Fair, running Sept. 2-8, sprayed all barns and areas with DDT before opening. Brockton Fair, which opened Sept. 9 for a week, took spraying precautions.

Weymouth, Mass., has declared a state of emergency due to the growing number of sleeping sickness cases. Specially equipped planes sprayed swamps and other mosquito breeding places from Middleboro to Quincy and ground crews sprayed stagnant pools. Henry Godin, Weymouth health officer, asked all persons to spray for mosquitoes in and around homes.

Dr. Roy F. Feemster, director of the Massachusetts State communicable disease department, said: "Planes will spray the marshes daily until we kill the disease carrying germs." There are 130,000 acres of marshes in southeastern Massachusetts. He said spraying will be carried out southeast from Westboro to Dartmouth and north to Andover.

Kansas State Gets Added Frontier Grant

MANHATTAN, KANSAS — The department of entomology at Kansas State College has received an additional $2,000 grant from the Frontier Chemical Co. of Wichita to support research on the action of grain fumigants and their effects upon insects which attack stored products.

This grant will supplement $3,000 received earlier in the year for this work, according to Herbert C. Knutson, head of the department. C. C. Dean and D. A. Wilbur are the entomologists in charge of the research.

St. Regis Executive, W. H. Versfelt, Dies

NEW YORK—William H. Versfelt, vice president of the St. Regis Paper Co., died Sept. 4, a short time after being admitted to the Roosevelt Hospital. He had been taken ill at the Union League Club.

In addition to being vice president, Mr. Versfelt was also treasurer and director of St. Regis. He joined the company in 1921, was named assistant treasurer in 1928 and treasurer in 1935. He was named vice president in 1945.

Edward Smith New PCA Post

WASHINGTON — The Potash Company of America has announced the appointment of F. Edward Smith, Jr., as assistant to the vice president in charge of sales. At the same time it announced the resignation of G. A. Woods.

HEADS COMMISSION

WASHINGTON—Wheeler McMillen, farm-magazine editor and longtime proponent of research to find better markets in industry for farm commodities, has accepted appointment as executive director of the bipartisan Commission on Increased Industrial Uses of Agricultural Products, the commission announced Sept. 12.

DU PONT URAMON® Ammonia Liquors

are non-corrosive . . . easy on your equipment

This mild steel tank car has carried UAL for over 23 years!

UAL is easy and economical to use. It can be used in ordinary steel equipment.

The excellent conditioning effect of UAL gives mixed fertilizers better "feel". . . can often speed curing. And UAL minimizes dusting, segregation and setting of conventional fertilizer mixtures.

In granulation, too, UAL works well! Gives hard, uniform granules that are best for storage and application. If you're thinking of granulation in your future plans, ask us about UAL.

You'll like the on-time delivery of UAL. There are four formulations available. For technical assistance and information on the formulation best suited to your use, write Du Pont.

URAMON®
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Better Things for Better Living . . . *through Chemistry*

Types of Fertilizers, Methods of Application And Use in Minnesota

A thorough discussion on types of fertilizers and methods of application involves the compiling of a considerable amount of information. This has been done by staff members at the University of Minnesota who have gathered data over a period of many years, covering soil types, fertility, grades of fertilizers used and methods of applying these nutrients to the soil.

A few statistics on the volume of fertilizers used in Minnesota, as well as the grades in most prevalent use, offer a splendid background for a discussion of this type. The increase in fertilizer use in the state has been tremendous, particularly during the past few years.

In 1926, for instance, only 5,000 tons of fertilizers were sold. By 1940, however, it was 18,627 tons; by 1950, 213,143 tons, and this last year over 371,000 tons, which incidentally represents a 16.7% increase over the preceding year.

Another thing that was engendered in part by the new fertilizer law in 1949 (which required 27% total plant food nutrients in fertilizers sold in the state) has been the increase in plant food content which this last year reached 39.4%, the highest in the nation.

The most popular grades were 5-20-20, 6-24-12, 4-16-16, 0-20-20 and 8-16-16, all of which sold over 14-15 thousand tons.

Savings in Higher Analysis

Comparison of selected grades sold in 1946 versus 1954 and 1955 will be of interest. In 1946, 2-12-6 was the principal grade sold. It went out of the picture completely in 1950 after the fertilizer law was passed. It was replaced by 4-24-12 which peaked in 1952 and now is being replaced by 6-24-12. As an illustration, in 1954, there were 19,000 tons of 4-24-12 sold and almost 34,000 tons of 6-24-12. We have the same situation with 3-12-12 versus 4-16-16 and 5-20-20.

Grade 3-12-12 showed peak use of 28,000 tons in 1949 and then declined to 3,000 tons in 1955. Grade 4-16-16 peaked at 39,000 tons in 1954 and declined to 31,000 tons in 1955. We now have 5-20-20 coming into the picture rapidly; 35,000 tons last year and 60,000 tons in 1955. The replacement of 2-12-6 in 1946 with 4-24-12 by 1950 represented a saving of a million dollars in freight and the farmer handled 86,000 tons less fertilizer. Likewise, the replacement of 3-12-12 in 1949 by 4-16-16 and 5-20-20 in 1954 represents a saving of $770,000 and means that 95,000 tons less fertilizer was handled.

Straight Materials

Another phenomenon entering the picture is the amount of plant nutrients sold as straight materials. In 1955, of the 371 thousand tons sold, 289 thousand tons or 78% was sold in mixed grades and 22% as straight materials. Of this latter, 48% was sold as straight nitrogen materials. The availability of nitrogen since the war has increased manifold and we have seen a revolution in nitrogen use.

The most spectacular increase has been with 82% nitrogen, anhydrous ammonia. In Minnesota last year, 40% of the straight nitrogen was anhydrous ammonia. We also have low pressure nitrogen solutions entering the picture which consist of mixtures of ammonium nitrate, urea and aqueous ammonia. Twenty-two per cent of the nitrogen sales were in the solution form.

The increase in use of nitrogen in Minnesota is also reflected in grade ratios. Ten years ago the N-P_2O_5-K_2O ratio was 1-11-4; phosphate was mostly used. In 1950, it was 1-8-3. In 1955 the ratio was 1-2-1. Use of nitrogen has increased 600% in the past five years.

There are more than 19 million acres of crop land in Minnesota, including cultivated hay land, of which nearly 6 million acres were in corn last year. The 371,000 tons of fertilizer would represent 39 lb. fertilizer for each cultivated acre. Now if all the fertilizer were used on corn, and that is where much of it is being used, this would amount to 120 lb. an acre. In terms of actual plant nutrients, this would represent 33,000 tons of nitrogen or 3 to 4 lb. for each cultivated acre; 75,000 tons of phosphoric acid or 8 lb. an acre; 40,000 tons of potash or 4 lb. an acre.

More Use—More Profit

We are still far short of needs. To replace the nutrients sold off Minnesota farms, we would need to add 1½ million tons of fertilizer annually or an increase of 431% over 1955 figures.

The upward trend in fertilizer use is surely in the right direction. Research has led to recommendations for increased fertilizer use. Proper use of fertilizer complements gains from other improvement practices such as varieties, better machines, rotations and pest control which in the aggregate have effected substantial yield increases. But there is still a gap between present use of fertilizers and the amounts which would be profitable.

The U.S. Department of Agriculture has estimated that average yields for seven crops in Minnesota: corn, oats, wheat, barley, flax, potatoes and hay, could be increased from 30% to 184% with proper fertilizer use.

Proper use of fertilizers in the field is of particular importance. Contact with seed, of course, is rather serious, depending upon the type of fertilizer used, the amount and its solubility. In one field, for instance, 20 lb. per acre of 8-16-16 in direct contact with the seed essentially "burned" out the corn, whereas 10 lb. per acre one inch away was entirely satisfactory. At 100 lb. per acre, in fact, seed contact is not too serious, particularly with 0-20-20. When ammonia nitrogen is one of the constituents in the mixed grade, seed contact is dangerous.

In using anhydrous ammonia, it is important that it be injected deep enough in the soil that it can be covered thoroughly and the soil should be wet enough that some diffusion can occur. Otherwise damage to the plant may result. We have seen another field where one of the spouts of the machine injected free ammonia near the soil surface in a preplant application. As a result grasses and weeds were not able to grow and wherever corn was dropped in the area it was damaged.

This past spring was hot and dry, corn was planted deep, fertilizer placement was often too close to the seed so that there was more "fertilizer burn" than usual. We also saw some fields where corn was planted across the ammonia injection band and injury had occurred. Proper use of fertilizer at current high rates is very important.

Fertilizer Placement

Special machines have been designed by University of Minnesota agricultural engineers for fertilizer placement work. One such applicator was used to accurately band the fertilizer beside the seed or at various depths below the seed. It proved to be a very fine machine for the purpose.

The equivalent of 500 lb. of 5-10-10 was used in these placement studies. It was applied in bands in several combinations which varied from one to five inches either beside or below the seed.

Growth differences were not marked although in general, placement below the seed as long as there was no seed contact, was superior to lateral placement of fertilizer. Lateral placement alone, in fact, was little better than the check. It was probably too dry at the experiment station for efficient use of fertilizer placed too close to the surface.

Experiments in other areas have shed additional light on the subject of placement. Experiments in Michigan have indicated that fertilizer placement may not be particularly important if the seedbed is in good structural condition. On the other hand, if the seedbed was in poor condition such as happens when one plows the soil wet and then works up the seedbed with disc and harrow, deep placement of fertilizer didn't work. This occurred because the plant roots didn't get down to the fertilizer band due to poor aeration.

The Michigan tests showed that when so-called minimum tillage was used, i. e., plowing followed by a light once-over treatment designed to keep the seedbed in a porous condition, then deep placement of fertilizer was almost immediately effective. The plant roots got down to the fertilizer band and were less subject to drouth because the lower zones were wetter.

It is thought that the so-called sub soil placement of fertilizer, down to 18-20 inches, may have possibilities on soils with well established hard pans or on other soils so long as the

EDITOR'S NOTE

The author of this article is Dr. William P. Martin, head of the Department of Soils, University of Minnesota. This material was originally presented recently before the Minnesota Canners and Processors Assn. at Rochester, Minn.

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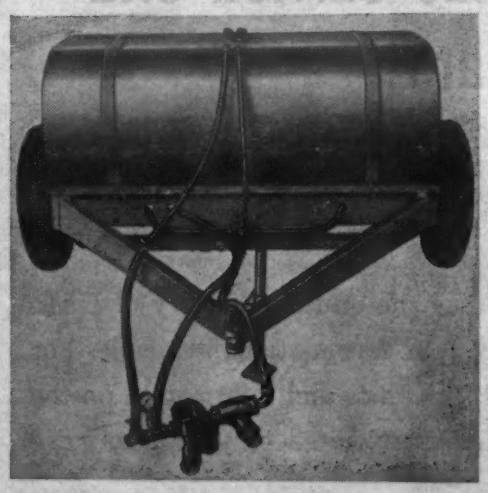

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ubsoiling operation and fertilizer placement occurred while the soils were dry.

Granulation and Solubility

The granulation of fertilizer is picking up rapidly and there are now over a hundred granulating plants in operation. The farmer likes these free flowing pellets. He has shown willingness to pay a premium for granular fertilizers. Does granulation have advantages?

The reason for band placement of fertilizers and the reason for granulation basically are that the plant nutrient salts used in our high analysis fertilizers are largely water soluble and thus subject to rapid fixation by the soil colloids. This is particularly true of the phosphates. The idea then is to use the soluble phosphates in granular form so that they will solubilize gradually and provide the plant with available phosphorus over a longer period of time.

Now for the partly soluble ammoniated phosphates and citrate soluble materials like calcium metaphosphate, the evidence is that these materials should probably be applied broadcast and thoroughly mixed with the plow layer so as to provide as much solubilizing surface as possible. Using the radio-tracer technique, it has been shown at Michigan that if the fertilizer granule is broadcast applied and plowed under, the soluble materials from the granule will diffuse out in as short a period as 24 hours if the soil is moist. Mixing this all up then is the same as though one were applying a readily soluble material in an extremely highly divided form, and the subsequent "reversion" or fixation of phosphorus will occur rapidly.

As mentioned earlier, anhydrous ammonia has come strongly into the picture. Prof. John MacGregor has used it a good deal in his nitrogen research work at the University of Minnesota. Some of the results indicate that nitrogen applied in late June is more effective for corn than nitrogen applied in early April. This is something that has to be checked further.

As regards the amount of nitrogen applied, whether it be anhydrous ammonia or ammonium nitrate or other, amounts above 60 lb. haven't been particularly effective, unless balanced out with phosphorus and potash. Now where one supplies adequate phosphorus and potash based on a reliable soil test then there is some evidence that you can have profitable additional increase from nitrogen application above 60 lb. These results are relative and are not final at all, but they indicate the type of information that must be obtained for a given soil situation if we are to balance our fertilizers properly and make intelligent use of the newer fertilizer technology.

Other results tend to support the thesis that fall-applied nitrogen is as effective as that applied in the spring. Prof. MacGregor's results would generally favor the idea at least for Minnesota, except possibly on sandy soils. Solid nitrogen fertilizers top-dressed on erodible lands could also be lost in part from erosion.

Liquid Fertilizers

One of the newest innovations in fertilizer use is the complete liquid fertilizer solution. The first tank car of this material was brought into Minnesota three years ago. It came in already mixed and ready to use. Special application equipment has been devised for this. Fifty-gallon tanks on the backs of tractors can supply the complete liquids for spraying on the soil surface through a weed sprayer boom. One can cover a large acreage quickly.

Different types of equipment have been demonstrated for use with low pressure or non-pressure liquid nitrogen or the complete liquid fertilizer solutions, and pressure equipment for anhydrous ammonia. The big problem with the liquids is that the fertilizer salts tend to crystallize out at concentrations above 32% total plant food and at low temperatures such as in storage over winter. They appear to be as good as the solids when used properly and at equivalent rates. Here is what some of the bulletins say in support of the liquid fertilizers: "Low capital investment for high output, low manufacturing costs, assured raw materials using furnace grade phosphoric acid with anhydrous ammonia as the neutralizing base and an application of potash to get the proper ratio up to 32% total plant food.

"The farmer benefits under certain circumstances from quick plant response, during crisis feeding, that is from foliar application through a spray rig or through sprinkler irrigation on high value crops; easy application; pest control along with plant feeding; possibly a competitive price," and so on.

Theoretically, these liquid fertilizers as soluble materials are immediately available to the plant. As pointed out earlier, however, complete solubility is not always an advantage which is one reason for granulation of solid fertilizers and band application and particularly to slow down the rate of phosphorus fixation.

Liquids are surely coming into the picture. As they are used in larger amounts they will shake down pricewise to their competitive position with other materials.

Just a word about a few other materials that are also coming into the picture. Diammonium phosphate is one. It contains 21% nitrogen and 53% available phosphoric acid. This was pioneered by the TVA. If diammonium phosphate is used as a starter fertilizer, there is danger of burning and particularly if potash is used also. With this product potash would probably be applied as a top-dress or soil application. There are even higher analysis materials. One can ammoniate calcium metaphosphate and come up with a product which contains 17% nitrogen and 73% phosphate. The availability of the phosphate is not impaired.

Another product is obtained from the direct ammoniation of rock phosphate during the acidulation process in the manufacture of concentrated phosphates. The resulting material can be supplied to the distributor as a slurry and applied through liquid applicator equipment. This would save the cost of drying and granulation. One could very well in the future apply a high concentrate material rather cheaply in the slurry form. Urea could be used in place of the anhydrous ammonia.

Other products are the so-called "nitro-phosphates." They are prepared with nitric acid rather than sulphuric acid in the acidulation of rock phosphate. Nitrogen and phosphate both occur in readily available forms, and one can add potash for a

(Continued on page 23)

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NAC PANEL

(Continued from page 1)

remain under the conditions most likely to result in high residues.

"The tolerance level established should be one that can be met when the user applies the pesticide according to proposed directions.

"There should be evidence about the chronic effect of the residues when they are fed to test animals. This should permit a reliable estimate of a feeding level that will cause no effect in the test animal.

"The tolerance level established for residues on human food should provide a safety factor; that is, we should not tolerate residues on human food that would cause injury in test animals. (As a broad guide we have considered a safety factor of 100 to be suitable for tolerances in foods other than milk but this figure depends upon the amount and type of evidence available.)

"If the quantity of pesticide that may be contributed to the diet from all sources, including that derived from residues on food, exceeds the quantity estimated to be safe, the tolerance should be set so that the point of estimated safety will not be exceeded.

"If the total quantity of the pesticide that may be ingested from all sources does not exceed the quantity estimated to be safe, the tolerance should be based on the quantity of residue which is needed to permit useful employment of the pesticide in agriculture.

"Where two or more pesticides have a related or cumulative effect on man or test animals, the tolerance should be set so that the total allowable residues for all such related compounds will not exceed a safe figure."

Mr. Rankin said that these eight principles are the ones the FDA has followed in establishing tolerances under provisions of the Miller Amendment. "We believe they are sound," he said, and added that they will permit pesticide chemicals to be employed usefully in agriculture without danger to the public health.

The FDA representative reminded his audience that temporary tolerances may be established for a chemical which has been granted an experimental permit by the USDA.

"Some people believe they need almost as much evidence for a temporary tolerance as for a permanent one," he said, but added that this is not correct. Neither is the assumption that a temporary tolerance is a guaranty that residues on the treated crop will be within the temporary tolerance level when the directions for use of a chemical proposed in the petition are followed. To clear up this matter, Mr. Rankin described a temporary tolerance as follows:

"The temporary tolerance procedure is one to reduce the cost of large scale experimental work on a new pesticide. It permits the marketing of produce treated with the new chemical, provided the residues are within the temporary tolerance level, i.e. the level temporarily judged safe. And how can you and we determine temporarily what level is safe? Subacute toxicity studies may be adequate from the standpoint of pharmacology. But if these show unusual toxicity such as a tendency to produce blindness or a tendency to produce serious blood disorders in test animals our scientists and yours will need more data to determine what residue level will be safe in the experimental program.

"Also we need evidence when granting a temporary tolerance that a sizeable portion of the crop treated under the experimental permit probably will be within the temporary tolerance level and suitable for marketing. But we believe that the person who conducts experimental work as contemplated by a temporary tolerance has a responsibility to test each treated crop before releasing it for human consumption to be sure that its residues are within the temporary tolerance level. If this were not true we would have to have more residue data to grant a temporary tolerance than has been required in the past.

"We have established 10 temporary tolerances already under the Miller Bill."

Mr. Rankin expressed hope that all pesticide labels and directions for use will assure the grower that if used according to label instructions, there will be no worry about the presence of illegal residues on the crops at harvest time. He said that there have been very few instances where any trouble was encountered from following printed instructions.

"There are some trouble spots, particularly with regard to forage crops," he said. "It has not been possible to establish tolerances for some of the pesticide chemicals that are widely recommended for use on forage, but we are working on this problem now and hope it will be resolved before the next growing season."

Mr. Coyne told the group that tabulations and summary sheets covering a recent USDA survey, are being prepared. These tabulations list the more common formulations of the particular chemical; the tolerance, if any, established for each crop; the customary dosage ranges registered and any limitations upon each use.

"For example," he said, "they will reflect the number of days between last application and harvest or the stage of plant growth at which treatment must be discontinued. Finally the tabulations provide space for comment on whether the specified directions are acceptable or will require revision in order to meet established tolerances."

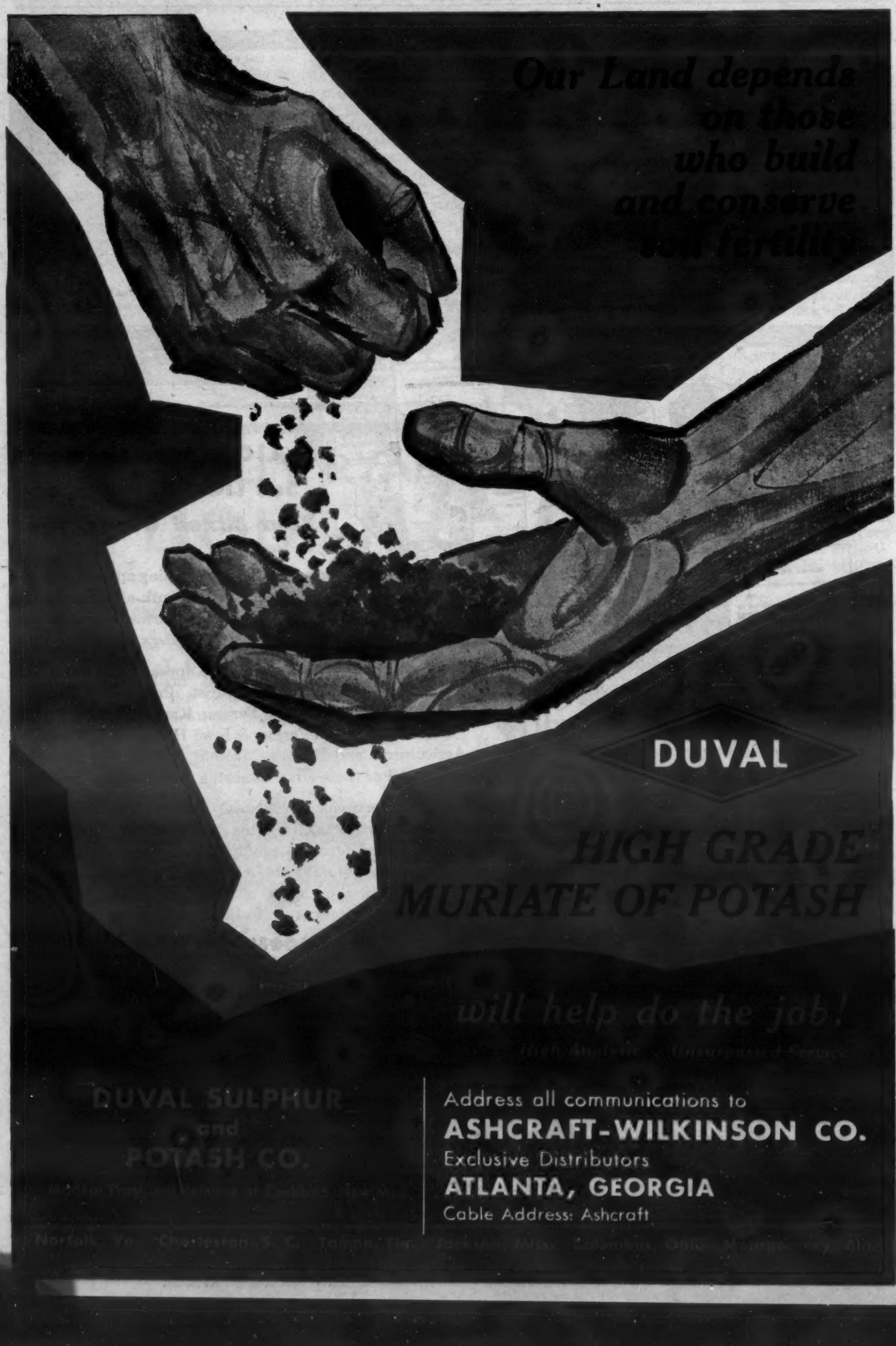
He said that the summary sheet for a given pesticide lists the various uses of that chemical in three categories:

1. Federally registered uses covered by established tolerances;

2. Federally registered uses not covered by established tolerances, and

3. When appropriate, uses covered by tolerances, but not federally registered.

It is chemicals that lie in the second category, he said, that present most of the more serious problems. "This category will include those uses which require a determination of the resultant residues," he explained. He added that after the industry has had an opportunity to review and comment on the tabulations and summary sheets, they will be returned to USDA for final evaluation. The next



step will be actual publication and distribution of the conclusions.

"We hope to have this information distributed to the groups cited and other interested persons well in advance of the 1957 growing season," he said. He added, however, that the numerous details yet to be worked out make it impossible to describe the exact form, date or mode of publication and distribution.

Mr. Coyne said he wished to clarify a prevailing misunderstanding that registration and certification of usefulness are one and the same. "We endeavored to make this distinction earlier," he said, "by publishing a notice in the Federal Register of Nov. 24, 1954. In this notice entitled 'Certification of Usefulness of Pesticide Chemicals,' it was pointed out that usefulness of a pesticide chemical will be determined on the basis of its practical pesticidal or biological effectiveness.

"This notice went further to point out that factors other than pesticidal or biological effectiveness are considered in granting of registration under the Federal Insecticide, Fungicide and Rodenticide Act. The criteria for registration are not all applied in considering the certification of usefulness and the fact that such a certification has been made does not mean that the economic poison can always be registered for the uses concerned.

"This notice was based on an interpretative statement regarding the meaning of the term 'useful' which was submitted by the USDA to the committee on interstate and foreign commerce of the House of Representatives during the hearings precedent to the enactment of Public Law 518 and appears in the report on those hearings. The report also includes this language:

"'The term pesticide chemical has been selected to make it clear that tolerances or exemptions under this Bill are to be established with reference to the poisonous, deleterious or inadequately tested ingredients of a formulated economic poison rather than with reference to the formulated or finished product itself. For example, in a finished product containing DDT, a tolerance under this Bill would be established for DDT rather than for the finished product itself.'"

"In essence, pesticide chemicals are certified, formulations of those chemicals are registered. As a matter of practice when we certify a chemical as useful on a given crop, if we can foresee any doubts as to formulations being registerable, we will express such reservations to the petitioner in the letter which transmits his copy of the certification of usefulness."

Dr. Decker made a plea to the end that pest control practices and recommendations should be simplified, rather than complicated further. "Today, even the best informed research and extension specialists find it difficult if not indeed impossible to prepare recommendations that will adequately protect several important crops and at the same time fully comply with all labeling and tolerance requirements."

He said that "if we continue to further complicate the making of pest control recommendations by pyramiding exceptions based upon unrealistic rules and regulations, agricultural specialists will have to abandon the time-honored practice of preparing practical spray schedules and pest control recommendations."

In spite of these tendencies toward over-complication, he said, the Miller Bill has accomplished a number of laudable ends. In the first place, it has given us a set of guideposts so that in the case of many pesticides and many crops, we now know exactly where we stand. For years, research workers and farmers operated in an atmosphere of uncertainty and at times, apprehension or fear. Today, however, "we have tolerances or exemptions from a tolerance requirement covering the use of from 1 to 30 or more pesticidal chemicals per crop for roughly 100 crops, and a total of about 100 pesticidal chemicals is involved, he said.

He added that we also now have reasonable assurance that as rapidly as the required data can be accumulated, additional tolerances can be obtained without undue delay. Prior to the passage of the Miller Amendment, he said, each request for a tolerance had to be accompanied by convincing evidence of necessity for use, which now has been replaced by the certification of usefulness by the secretary of agriculture.

Provisions in the law for referral of unresolved disputes to a panel of scientific experts now provides a reasonable degree of protection from possible unjustifiable arbitrary decisions or rulings.

Mr. Noone's talk indicated that a survey, conducted recently by the association among its members, indicated that there is general agreement among industry people, government agencies and the association on basic principles of the legislation. There was no criticism of the legislation as such, he said, and on the contrary, there was general support of it.

"It appears to us that some of the difficulties which have arisen in the past have resulted from a lack of understanding and appreciation by both industry and government representatives of the other man's viewpoints, problems and limitations. Industry representatives have not always recognized the specific requirements of the law and the reasons for them. Government representatives have not always recognized the fact that industry needs prompt and decisive answers and cannot continue indefinitely to conduct expensive research tests to obtain more detailed data.

"From several sources, we have received a suggestion for overcoming this difficulty and have it under consideration. It involves holding a seminar or conference later this year to discuss the principles and procedures involved in the law. It would be designed, primarily, for the individuals who are handling tolerance and registration matters for the companies.

"Food and Drug and the U.S. Department of Agriculture have both indicated their willingness to cooperate and participate in such a seminar. Representatives from these agencies would attend part of the session and explain their interpretation of the law, their data requirements, and the procedures followed by them. We expect that they would also give us suggestions on how the burden on both industry and government could be eased in the collection of data and in the preparation and processing of petitions for tolerances. Members of the NAC staff, and industry personnel who have handled petitions for their own companies would also present ideas and suggestions based upon their knowledge and experience. We believe that such a seminar would be helpful to all concerned."

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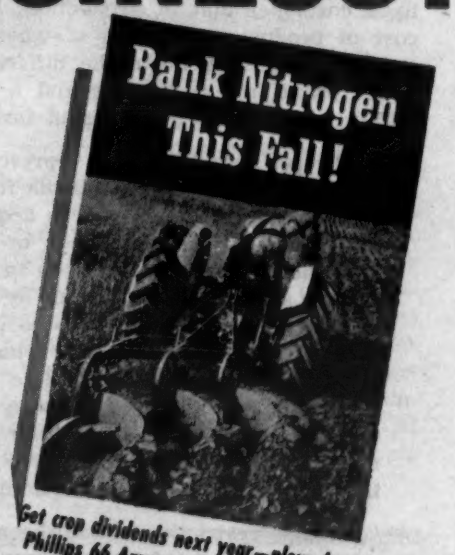
- Bigger, faster gains at less cost per pound.
- Nitrogen carry-over for crops in rotation.



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A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Midwestern states.

Manufacturers, Dealers, Extension People Must Cooperate to Reach Sales Potential

A good presentation of the theme that more fertilizer material can still be used profitably on allocated acres, was made recently by Dr. Floyd W. Smith, professor of soils at Kansas State College. Dr. Smith was speaking at a dinner sponsored by Olin Mathieson Chemical Corp. upon the occasion of entry of a trainload of fertilizer into the state of Kansas.

Despite the presence of surpluses in farm output, he declared, the farmer can still make profitable use of additional amounts of fertilizer to reduce his unit of cost and increase general efficiency of production.

"Proper use of fertilizer allows the farmer to reduce his fixed costs per unit of production," Dr. Smith said. "Taxes, costs of seedbed preparation, cost of seed, etc., remain essentially the same per acre whether the farmer produces 10 or 40 bu. an acre of wheat. Timeliness of farm operations and full utilization of scientific knowledge about all farm operations represent ways of reducing fixed costs. However when all has been done in this regard, full and efficient utilization of fertilizer still allows for much more reduction in fixed costs per unit of production. Reducing the cost of producing a bushel of wheat by only a small amount may mean the difference between a net profit for one farmer and a mere contribution to surpluses by a second farmer.

Proper use of fertilizer represents a way of fully utilizing land available for production. Usually it is not easy to acquire more land to allow for expansion of the farm operations. Business operation in any form usually should be accompanied by expansion or otherwise it is not likely to enjoy continued prosperity. No matter what the reasons may be, it is more sensible to expand the volume of farm business by investing wisely in fertilizers rather than by buying more land at the present time, especially if one has to mortgage the home farm.

"Acreage restrictions have been imposed to prevent the piling of still larger volumes of wheat and other farm products. Full use of fertilizers on a greatly reduced acreage should mean less total production of those commodities and greater net profit because of the increase in production per unit area accompanied by a greatly reduced fixed cost of production. As radical as it may at first seem, this undoubtedly is the only sensible way to maintain a satisfactory farm population by guaranteeing it a sufficient income and to insure sufficient farm manpower in case of a future emergency.

"The proper use of fertilizer allows a farmer to stabilize production. One of the outstanding facts established by our research at the Columbus experiment field in southeastern Kansas has been that wheat yields have fluctuated relatively much less from year to year on the most productive plots than has been true on the unfertilized plots. Coupled with the much higher level of production on the fertile soil, this has meant a much more uniform and constant volume of business from year to year. Uniform volumes of business mean much more efficient utilization of invested capital and resources from year to year.

"Application of the mineral nutrients contained in this trainload of fertilizer represents our only practical way to invest in the future of our soil's productivity. True we can utilize legumes to supply some of our nitrogen needs, but we do not, however, have any such means of replenishing phosphorus and potassium. Therefore, not only are we investing for immediate economic returns but we are also placing a stake in our nation's future when we distribute these cars of fertilizer.

"Discussion so far has revolved primarily around the immediate and potential benefits to which the farmer may avail himself," Dr. Smith went on. "As nice as this may sound, such is not realized easily unless the farmer has substantial help from his fertilizer dealer. It appears that the dealer may help the farmer most by aiding in the following ways:

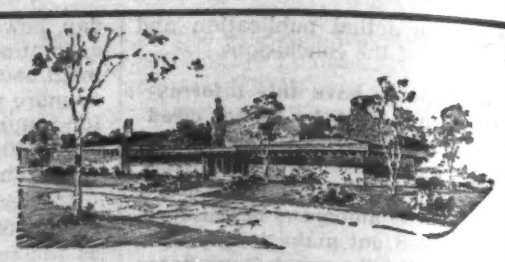
"First, every dealer should be able to serve the farmer when he needs it. The farmer is an individual who makes his fertilizer purchases in accordance with his most recent harvests, the most recent rainfall which he has received, and the present price of wheat. It appears that in spite of all we can do otherwise to educate the farmer, these are his guiding factors. Every dealer should recognize these motives and be equipped to the best of his ability to serve accordingly. This does not mean that the dealer should not continue to encourage off-season purchases but unless some special bonuses are offered for such purchases, off-season buying is not likely to be an important factor in volume of fertilizer business.

"Secondly, every dealer should be equipped to serve the farmer with what he needs. Use of a phosphatic fertilizer when only nitrogen is needed is not a good way to have the farmer realize the million dollar potential for this trainload of fertilizer." Dr. Smith added that likewise, use of potash-containing grades in soils where this element is not needed, is not good business. "The best way for the dealer to be able to give sound advice is for a self-imposed educational system to be developed among dealers themselves. Cooperation with county extension personnel, and use of data from the agricultural experiment stations should aid materially in this regard.

"Next, we should recognize our responsibility in directing proper application of fertilizer to the soil. On this occasion we are dealing basically with phosphatic fertilizer, virtually all of which eventually will be used for wheat. Research done twenty-five years ago clearly illustrated that broadcasting of phosphate for wheat or disking it in was only half as effective as was application by means of a combination grain and fertilizer drill. This is true both for straight phosphates and mixed fertilizers. Dealer encouragement of use of the combination grain and fertilizer drill rather than use of the broadcast spreader can do more toward realizing the million dollar potential than can any other factor over which we have any control.

"Always we should strive to make full use of soil testing facilities. We have many thousands of dollars invested in soil testing laboratories and facilities and we also have many trained technicians to serve the farmer. Soil testing facilities have done much to expand the fertilizer industry. No doubt one of the greatest opportunities for still further expansion lies in the fuller utilization of these facilities.

"Finally, the dealer should impress upon the farmer that he, as keeper of our soil, has a responsibility toward maintaining its fertility. Proper use of fertilizer nutrients so as to maintain full production should allow for at least a maintenance of our basic fertilizer nutrient needs in the soil. This is a bare minimum which we can expect to accomplish."



Croplife

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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is $5 for one year ($8 a year outside the U.S.). Single copy price, 25¢.

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MEETING MEMOS

Sept. 18-19—Symposium on Chemicals in Food Production, Presented by Division of Chemical Marketing and Economics, American Chemical Society, Atlantic City, N.J.

Sept. 27—New Jersey Fertilizer Conference, Rutgers University College of Agriculture.

Oct. 8-10 — Carolinas-Virginia Pesticide Formulators Assn., Inc., Annual Meeting, Holly Inn, Pinehurst, N.C., W. R. Peele, 516 S. Salisbury St., Raleigh, Secretary-Treasurer.

Oct. 9—Western Agricultural Chemicals Assn., Fall Meeting, Villa Hotel, San Mateo, Cal., C. O. Barnard, 2466 Kenwood Ave., San Jose, 28, Cal., Executive Secretary.

Oct. 15 — Fifth Annual Chemical Sales Clinic, the Salesmen's Association of the American Chemical Industry; Hotel Commodore, New York City; chairman, Preston F. Tinsley, Westvaco Chlor-Alkali Division, Food Machinery and Chemical Corp., 161 East 42nd St., New York 17, N.Y.

Oct. 16-17—National Nitrogen Solutions Assn., Annual Meeting and Trade Show, City Auditorium, Sioux City, Iowa; John White, Auburn, Neb., secretary.

Oct. 16-18—Fertilizer Industry Round Table, Shoreham Hotel, Washington, D.C. Vincent Sauchelli, Chief Agronomist, Davison Chemical Co., Div. W. R. Grace Co., Baltimore 3, Md., chairman.

Oct. 16-18—Canadian Agricultural Chemicals Assn., Fourth Annual Meeting and Conference, Sheraton-Brock Hotel, Niagara Falls, Ontario.

Oct. 18-19—Association of American Fertilizer Control Officials, Shoreham Hotel, Washington, D.C., B. D. Cloaninger, Clemson Agricultural College, Clemson, S.C., secretary-treasurer.

Oct. 22-23—Fertilizer Section, National Safety Council, La Salle Hotel, Chicago, Ill.; Curtis A. Cox, Virginia-Carolina Chemical Corp., Richmond, Va., chairman.

Oct. 23-24—Pacific Northwest Garden Supply Trade Show, Shrine Auditorium, Portland, Ore.

Oct. 25—Middle West Soil Improvement Committee, Annual Meeting, Sherman Hotel, Chicago; Z. H. Beers, Executive Secretary, 228 N. La Salle St., Chicago 1, Ill.

Nov. 2—Southern Soil Fertility Conference, Atlanta-Biltmore Hotel, Atlanta, Ga.

Nov. 7-9—Agricultural Ammonia Institute, Annual Convention, Atlanta Biltmore Hotel, Atlanta, Ga., Jack F. Criswell, Claridge Hotel, Memphis, executive vice president.

Nov. 7-9 — Pacific Northwest Plant Food Assn., Annual Convention, Harrison Hot Springs Hotel, Harrison Hot Springs, British Columbia, Leon S. Jackson, Lewis Bldg., Portland, Ore., secretary.

Nov. 11-13 — California Fertilizer Assn., 33rd annual convention, Del Coronado Hotel, Coronado, Cal.; Sidney H. Bierly, executive secretary, 475 Huntington Drive, San Marino 9, Cal.

Nov. 13-15—18th Annual New York State Insecticide and Fungicide Conference and 9th Annual Pesticide Application Equipment Conference, Bibbins Hall, Cornell University, Ithaca, N.Y.

Nov. 19-20 — Eastern Branch, Entomological Society of America, Hotel Haddon Hall, Atlantic City, N.J., B. F. Driggers, Rutgers University, New Brunswick, N.J., secretary.

Nov. 19-20—Ohio Pesticide Institute winter meeting, Neil House, Columbus, Ohio.

Nov. 27-28—Indiana Fertilizer Conference, Memorial Union, Purdue University, Lafayette, Ind.

Nov. 28—Oklahoma Fertilizer Dealers Conference, Sponsored by the Oklahoma Plant Food Educational Society, Oklahoma A&M College, Stillwater.

Nov. 29—Oklahoma Soils and Crops Conference, Oklahoma A&M College, Stillwater.

Dec. 6-7—Alabama Soil Fertility Society, Whitley Hotel, Montgomery, Ala.

Dec. 10-12—13th Annual North Central Weed Control Conference, Sherman Hotel, Chicago.

Dec. 13-14—Soil Fertility and Plant Nutrition Short Course, University of Missouri, Columbia, Mo.

Dec. 27-31—Entomological Society of America, Annual Meeting, Hotel New Yorker, New York City.

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Jan. 23-25 — Southern Weed Conference, Bon Aire Hotel, Augusta, Ga.; Walter K. Porter, Jr., Agricultural Experiment Station, Louisiana State University, Baton Rouge, secretary.

Jan. 28-29—National Cotton Council of America, Annual Meeting, St. Louis, Mo.

Jan. 31-Feb. 1-2 — Agricultural Aircraft Assn., Annual Convention, Senator Hotel, Sacramento, Cal., Wanda Branstetter, Route 3, Box 1077, Sacramento, Executive Secretary.

June 26-28 — Eighth Annual Fertilizer Conference of the Pacific Northwest, Benson Hotel, Portland, Ore. B. R. Bertramson, Washington State College, Pullman, Wash., chairman.

Fertilizer Puts Money In This Farmer's Pocket

FARGO, N.D.—Edwin Dietz, west of Tappen in Kidder County, N.D., was pleased this season with the yield increase produced by 100 lb. per acre of 12-24-0 analysis fertilizer in a trial on his farm. Al Bye, county extension agent, reported the fertilizer in the trial plot resulted in an 8-bu. increase in wheat over unfertilized wheat in the same trial.

The yield on the fertilized part of Mr. Dietz' field was 20.8 bu. per acre. On the unfertilized area the yield of wheat was 12.8 bu. Cost of the fertilizer was about $4.50 an acre.

Mr. Bye points out that, with wheat valued at $2 bu., the fertilizer produced about $11.50 an acre increased income over and above the cost of applying fertilizer. It would pay well to fertilize even if the yield improvement were as little as 4 bu. an acre, Mr. Bye said.

John E. DeKrey, farmer near Pettibone, in Kidder County, reported a yield of 70 bu. per acre on an 8-acre field of fertilized barley.

SOIL BANK APPOINTMENT

WASHINGTON — Ezra Taft Benson, secretary of agriculture, has announced the appointment of Dwight W. Meyer of Odebolt, Iowa, former chairman of the Iowa State ASC Committee, to be staff assistant in charge of grain acreage reserve programs of the Commodity Stabilization Service's new soil bank division in Washington. Thomas E. Hamilton of Westfield, Wis., has been named staff assistant in charge of the soil bank's conservation reserve program.

DR. MARTIN

(Continued from page 19)

balanced fertilizer ratio. The limiting factor here is its high cost.

Mention should also be made of the urea-formaldehyde mixtures. These are related to the resins and pastics. Nitrogen can be made to become slowly available. This slow availability makes the product particularly valuable as a turf fertilizer, for high value vegetable and fruit crops and possibly for other uses.

Solutions of formaldehyde and urea are also finding uses as soil fumigants in the control of soil pests, like fungi, nematodes and weeds. They are added to the soil as a drench along with enough water to move them into the soil. The formaldehyde soon volatilizes out of the soil leaving the seedbed enriched in nitrogen from the urea.

Fertilizer-pesticide (mostly insecticide) mixtures are increasing in tonnage every year. They are used mostly for the control of corn root worms. The plant managers don't like them because of possible health hazards created in the plant. Also very small amounts are needed and it's very difficult to obtain a good mix which will assure the farmer that he is applying the right amount of pesticide for a given situation.

However, there are now available special machines which will help to alleviate the problems. Perhaps these may offer answers to the combined application of fertilizers and pesticides. There are many knotty problems remaining to be solved.

Bulk spreading of fertilizers is already in the picture. Low cost, ease of application and off season spreading are cited as advantages. This may be an excellent way to build up soil fertility to the high levels necessary for today's intensive agriculture. This will not, however, take the place of starter fertilizer and sidedress nitrogen applications for corn.

Florida Consumption

TALLAHASSEE, FLA. — Fertilizer consumption in Florida during July totaled 107,651 tons, according to the state department of agriculture. This total included 35,479 tons of mixed goods and 72,172 tons of materials.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge $2.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Classified advertising rate not available for commercial advertising. Advertisements of new machinery, products and services accepted for insertion at minimum rate of $9 per column inch.

All Want Ads cash with order.

BUSINESS OPPORTUNITIES

FERTILIZER PLANTS FOR SALE OR lease — Here is an opportunity for one with limited capital to lease a plant or purchase in Midwest. Inquire Karr & Company, Realtors, 923 East Broad St., Columbus 5, Ohio.

Welcome Rain Falls In New England

BOSTON—Rain throughout southern New England Sept. 6-7 was worth $1 million an inch to livestock and later summer crops, Louis Webster, director of division of markets with the State Agriculture Department, reported.

Greater Boston soaked up 2.2 inches of rain during a 10-hour period. The rainfall was the heaviest recorded here in several months and ended a long drought, which caused an estimated $1 million loss. The rainfall was more precipitation than the whole month of August produced (1.46 inches).

Holyoke, Mass. had 4.09 inches of rain during a two hour period. Springfield, a few miles away, had 2.40 inches for a comparable period.

AGRONOMIST RESIGNS

STATE COLLEGE, N.M.—John A. Long, assistant in agronomy with the New Mexico A&M Experiment Station, resigned effective Sept. 7, John C. Overpeck, head of A&M's agronomy department, has announced. Mr. Long will attend Texas A&M College to complete work for a Ph.D. degree, specializing in forage and turf grasses. He has conducted weed control research at A&M since he joined the staff there in 1954.

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A Complete Sales Medium..

CROPLIFE is the only *complete sales medium* directed to the agricultural chemical industry. It is a *weekly* newspaper appealing to all segments of the industry. One of its editorial functions is to knit more closely together all those industry elements—manufacturers, agents, retailers, the educational echelon and farm advisor groups. It does this by:

- Keeping all segments informed of all industry news.
- Providing feature material designed to help manufacturers and mixers to do a better job, to help dealers sell and to help farm advisors and educational people make sound recommendations.
- Keeping all industry alert to current and proposed government action.
- Providing a channel through which news and advertising can reach all segments of the industry.

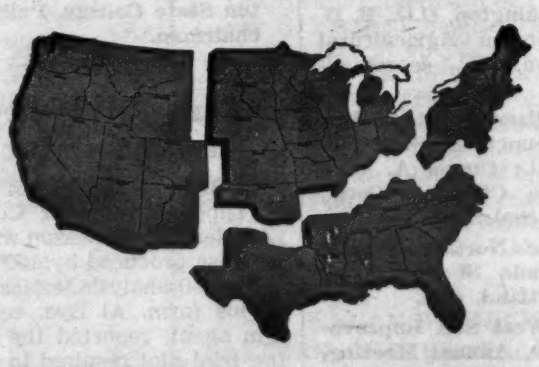
This new approach to business journalism for the agricultural chemical industry is being made by a company with 80 years of experience in newsgathering and publishing and one which has built an unchallenged reputation for reliability and service. Advertising of your products and services in Croplife will mean *richer sales fields* for you!

National Coverage Weekly . . .

Croplife's carefully controlled circulation provides national weekly coverage of manufacturers, formulators, mixers and ingredient suppliers.

Plus Regional Coverage by Crop-areas . . .

In addition, a unique regional circulation plan provides advertisers with a selective crop-area coverage of wholesale and retail dealers and farm advisory personnel.



In addition to its national coverage, Croplife offers a selective regional circulation plan in these crop areas

WRITE—WIRE—PHONE our nearest office for a complete analysis of Croplife's important role in your advertising program.

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